# Essays in Behavioral Economics – Evidence on Self-Selection into Jobs, Social Networks and Leniency

Bernard Richter


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# Essays in Behavioral Economics

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# Evidence on Self-Selection into Jobs, Social Networks and Leniency

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| **CDF** | Cumulative Distribution Function |
| **SUR** | Seemingly-Unrelated Regression |
| **OLS** | Ordinary Least Squares |
| **GLS** | Generalized Least Squares |
| **DHPol** | Deutsche Hochschule der Polizei |
| **ZPD** | Zentraler Polizeipsychologischer Dienst |
| **EAV** | Eignungsauswahlverfahren |
| **TPP/R** | Third Party Punishment/Reward |
| **NGO** | Non-governmental Organization |

# Chapter 1

# Einleitung

Die folgende Dissertation mit dem Titel *Essays in Behavioral Economics – Evidence on Self-Selection into Jobs, Social Networks and Leniency* besteht aus einer Sammlung von vier wissenschaftlichen Abhandlungen. Dabei sind zwei dieser Arbeiten thematisch miteinander verknüpft, während die anderen beiden Abhandlungen jeweils einer eigenständigen Fragestellung nachgehen. Alle Arbeiten verbindet die Analyse von theoretischen Konzepten und Erkenntnissen der Verhaltensökonomie unter Verwendung der experimentellen Methode. Den Zusammenhang meiner Forschungsarbeiten möchte ich zunächst erläutern, um im Anschluss daran eine Zusammenfassung der einzelnen wissenschaftlichen Abhandlungen zu geben.

Im neoklassischen Ansatz der Ökonomie wird der Mensch als ein *Homo Oeconomicus* beschrieben, im Sinne eines Nutzenmaximierers, welcher versucht ist mit geringstem Mitteleinsatz den größtmöglichen Nutzen zu erreichen. Für einen nutzenmaximierend handelnden Menschen gelten dabei folgende drei Axiome: unbegrenzte Rationalität, unbegrenzte Willenskraft und rein egoistische Motive. Ein solches theoretisches Konstrukt kann beinahe jeder Form von ökonomischen (und in gewissem Maße auch nicht-ökonomischen) Handeln unterlegt werden (Camerer and Lowenstein, 2003). Die Beobachtung der Interaktionen von Menschen offenbart allerdings Anomalien, welche sich mit dieser Sichtweise nicht erklären lassen. Die Theorie des Nutzenmaximierers eignet sich jedoch in besonderer Weise, um widerlegbare Vorhersagen zu treffen. Die Verhaltensökonomie ist in ihrem Kern der Überzeugung, dass die Berücksichtigung psychologischer Grundlagen einen bedeutenden Beitrag zum Verständnis der Ökonomie und des menschlichen Handeln selbst leisten kann – sei es durch neue theoretische Modelle, eine bessere Vorhersage von im Feld beobachtbarem Verhalten oder durch die Ausarbeitung und Einführung neuer Richtlinien. Die Bewertung der daraus hervorgegangenen Erkenntnisse erfolgt anschließend hinsichtlich ihrer Kongruenz mit der Realität, ihrer Generalität und schließlich ihrer Belastbarkeit anhand der Genauigkeit der Vorhersagen (Stigler, 1965).

Die Erkenntnis, dass Menschen in ihrem Handeln nicht ausschließlich im Sinne eines Nutzenmaximierers agieren, beschrieb bereits Adam Smith in seinem Buch "*The Theory of Moral Sentiments*". Er traf dabei Annahmen über die psychologischen Prinzipien, die dem Menschen in seinem ökonomischen Handeln zugrunde liegen. Ein Zitat etwa lautet "we suffer more [...] when we fall from a better to a worse situation, than we ever enjoy when we rise from a worse to

a better" (Smith, 1801). Es beschreibt dabei das Prinzip der Verlustaversion, bei dem Einbußen einen höheren Nutzenverlust herbeiführen als etwa Zunahmen einen Nutzengewinn. Diese und andere nicht mit dem Standardmodell zu vereinbarenden Beobachtungen veranlassten zu Beginn des vergangenen Jahrhunderts Ökonomen (wie etwa Herbert Simon in seiner Arbeit über die "bounded rationality" aus dem Jahre (1987)) sich mit psychologischen Prinzipien und den damit verbundenen Grenzen der Rationalität systematisch zu befassen. Psychologen wie Daniel Kahneman und Amos Tversky[1] waren es, die ökonomische Modelle psychologischen Modellen gegenüberstellten und damit die moderne Verhaltensökonomie maßgeblich prägten.

Einer Einteilung von Camerer und Lowenstein (2003) folgend lässt sich die Forschung in der Verhaltensökonomie in zwei Kategorien untergliedern: Bewertung und Entscheidung. Bei der Ersten wird erforscht, welche Prozesse bei der Einschätzung von Wahrscheinlichkeiten und Ergebnissen zum Tragen kommen[2]. In der Zweiten wird erforscht, auf welcher Grundlage Menschen Entscheidungen treffen und auf welche Bewertungsgrundlagen sie sich dabei berufen, zum Beispiel auf gewisse Präferenzen etwa. Die in dieser Dissertation vorgestellten wissenschaftlichen Abhandlungen untersuchen die Verhaltensweisen von Menschen in ökonomisch relevanten Situationen durch Aufstellung und Überprüfung geeigneter Hypothesen im Rahmen von Experimenten. Genauer betrachtet wird dabei stets der Prozess der Bewertung, der zu einer Entscheidungsgrundlage führt, und der Entscheidung, die zu einer Bewertungsgrundlage wird.

Bereits seit Beginn der Forschung im Bereich der Verhaltensökonomie stellen Experimente, welche auch in dieser Arbeit verwendet werden, ein bedeutendes Hilfsmittel dar. Die Verwendung der Methoden der experimentellen Wirtschaftsforschung ermöglicht es, individuelles Handeln in Entscheidungssituationen kontrolliert zu beobachten und Rückschlüsse auf die zu Grunde liegenden Motive und Grundlagen zu ziehen. Die experimentelle Methode erlaubt dabei durch die Interaktion von Teilnehmern, deren strategisches Verhalten zu analysieren und vorab formulierte Hypothesen bzw. Theorien zu verifizieren oder zu falsifizieren. Ein Großteil der Experimente wird dabei in Laboren durchgeführt, in welchen die Teilnehmer[3] mit Entscheidungen in einem vorher definierten Rahmen konfrontiert werden[4]. Da diese Forschungslabore zumeist von Universitäten betrieben werden und in der freien Wirtschaft kaum vorzufinden sind, werden häufig Studenten verschiedenster Fachrichtungen als Teilnehmer eingesetzt und ihr Verhalten

[1] Zwei der herausragenden Arbeiten, Tversky and Kahneman (1974) und Kahneman and Tversky (1979) wurden in den führenden Fachzeitschriften veröffentlicht und besonders letztere gilt als eine der meist zitierten Publikation der Ökonomie.

[2] Prinzipien für die Bewertung von Wahrscheinlichkeiten sind dabei etwa die Konzepte der gezielten Stichprobe, das Bayesianische Updating oder andere Heuristiken.

[3] Im Folgenden wird der Einfachheit halber ausschließlich die männliche Form (z.B. Teilnehmer) verwendet, auch wenn sowohl männliche als auch weibliche Personen gemeint sind.

[4] Dies stellt, im Vergleich zur Verwendung von historischen Daten, einen Vorteil in der Konditionierbarkeit und Kontrollierbarkeit das Rahmenbedingen dar.

untersucht. Obwohl dieser Probandentypus nicht von der Hand zu weisende Vorteile mit sich bringt, da er sowohl leicht rekrutierbar ist, eine hohe Auffassungsgabe besitzt und nur geringe Opportunitätskosten für seine Teilnahme hat, liegt ein Nachteil in der Übertragbarkeit der Erkenntnisse auf andere Teilnehmergruppen oder die Gesamtpopulation.

Die Frage nach der Generalisierbarkeit von Ergebnissen aus einer künstlichen Laborumgebung zur Beantwortung ökonomischer Fragestellungen in realen Umgebungen kann allerdings aufgrund mangelnder externer Validität nicht vollständig geklärt werden. Eine Arbeit von Levitt und List aus dem Jahre 2007 stellt ebendiese Kritik in den Fokus und stellt fest, dass etwa typische "*Labor-Effekte*" – etwa aufgrund mangelnder Transparenz, sogenannter "*non-anonymity effects*", oder der Selbstselektion bei der Rekrutierung der Teilnehmer – zu Einschränkungen der Übertragbarkeit führen können. Einen weiteren kritischen Faktor neben der Auswahl der Teilnehmer stellt der Aufbau des Experimentes selbst sowie dessen Durchführung dar, bei welchem es zu sogenannten "*framing effects*" kommen kann. So können etwa durch Handlungsanweisungen bestimmte Verhaltensmuster suggeriert und herbeigeführt werden, so z.B. der "*experimenter demand effect*", wie er in Zizzo (2010) beschrieben ist.

Eine Möglichkeit, den Einschränkungen des Labors und der Verwendung unerfahrener Teilnehmer entgegenzuwirken, ist der Einsatz von Feldexperimenten. Dabei werden ökonomische Entscheidungen in natürlichen Umgebungen beobachtet. Diese Vorgehensweise ist insbesondere bei ökonomischen Fragestellungen sinnvoll, die gezielt auf das Verhalten bestimmter, durch die Fragestellung definierter Probandengruppen abzielen – etwa in den Bereich der Entwicklungsökonomie und spezifischen politischen Fragestellungen (Falk und Heckman, 2009). Eine sinnvolle Kombination aus Labor und Feldexperimenten kann helfen, deren jeweilige Nachteile auszugleichen und somit deren Validität zu erhöhen.

Der Schwerpunkt meiner dreieinhalbjährigen Forschungsarbeit lag darauf, anhand geltender Konzepte der Verhaltensökonomie unter Verwendung der verschiedenen experimentellen Methoden das Entscheidungsverhalten von ausgesuchten Probandengruppen zu analysieren.

Die ersten beiden wissenschaftlichen Abhandlungen meiner Dissertation beschäftigen sich daher mit bisher in der Ökonomie unerforschten Probandengruppen und zeigen gezielt die sozialen Präferenzen bezüglich ihres Normdurchsetzungsverhaltens auf. In der ersten Arbeit mit dem Titel "*Sorting of motivated agents – empirical evidence on self-selection into the German Police*" wird das Entscheidungsverhalten von Polizeibewerbern hinsichtlich ihres Entschlusses sich für den Polizeidienst zu bewerben untersucht. Die Datenerhebung erfolgte hierbei im Rahmen eines Online Experimentes. Diese Methode hat im Vergleich zu Laborexperimenten die Vorteile, mit geringem Aufwand einen großen Stichprobenumfang zu erhalten und bei Bedarf die Untersuchung wiederholen bzw. auf einen anderen Teilnehmerkreis übertragen zu können.

Ebenso wurde diese Methode für die zweite Abhandlung mit dem Titel "*Selection and formation of motivated agents – empirical evidence from the German Police*" verwendet, welche eine thematische Ergänzung der ersten Abhandlung darstellt. Dabei wurden die Bewerber für den Polizeiberuf nicht einer repräsentativen Kontrollgruppe gegenübergestellt, sondern mit Polizeianwärtern verglichen, welche für den Polizeidienst bereits ausgewählt worden waren. Aufgrund derselben Erhebungsart ist anzunehmen, dass ein Vergleich der beiden Gruppen methodisch möglich ist.

Die dritte Abhandlung mit dem Titel "*Selectivity and opportunism: two dimensions of gender differences in trust games and network formation*" untersucht die geschlechterspezifischen Unterschiede bei der Herausbildung von sozialen Netzwerken. Um diese beschreiben zu können, wurden drei verschiedene Erhebungsmethoden gewählt. Zunächst wurde im Rahmen einer Einführungsveranstaltung an der Goethe-Universität Frankfurt mittels einer klassische Befragung ein Teilnehmerpool gebildet und erhoben, der aus Erstsemesterstudenten des Fachbereiches Wirtschaftswissenschaften an ihrem zweiten Studientag besteht. Dies ist insofern interessant, als das diese bisher über kein etabliertes Netzwerk an der Universität verfügen. In einem weiteren Schritt wurden alle Teilnehmer in das FLEX[5] Labor eingeladen und ihre Entscheidungen in einem Experiment erhoben. Um die Entwicklung des Netzwerkes beobachten, beschreiben und in Verbindung mit dem Verhalten im Experiment bringen zu können, wurden alle Teilnehmer im zweiten Semester zu ihrem sozialen Netzwerk an der Universität mittels eines Online Fragebogens befragt. Diese Datenerhebungsstrategie erlaubte größtmögliche Flexibilität bei gleichzeitiger Erhebung von Experimentverhalten in einer kontrollierten Umgebung.

Die vierte Abhandlung dieser Dissertation mit dem Titel "*Antitrust, auditing and leniency programs: evidence from the laboratory*" bearbeitet eine Fragestellung der Industrieökonomie im Rahmen eines Laborexperimentes. Es wird untersucht, ob Probanden in der Rolle von Firmen bereit sind, eine Kommunikation zum Zwecke der Preisabsprache einzugehen und diese tatsächlich zur Koordination zu nutzen. Ein Spieler übernimmt die Rolle einer Kartellrechtsbehörde, welche diese Handlungen aufdecken und sanktionieren kann. Dadurch wird explorativ untersucht, ob Probanden in der Rolle der Firmen auch bereit wären, ein Straffreiheitsprogramm zu wählen. Als Probanden für diese Studie wurden Studenten der Goethe-Universität aus verschiedenen Fachbereichen eingeladen. Hierbei spielte die kontrollierte und überwachte Umgebung des Laborexperiments eine entscheidende Rolle, um gezielt Preissetzungs- und Kommunikationsstrategien der Teilnehmer unter anonymer Interaktion untersuchen zu können.

[5]Frankfurter Labor für experimentelle Wirtschaftsforschung.

# Sorting of Motivated Agents – Empirical Evidence on Self-Selection into the German Police

Die erste wissenschaftliche Abhandlung trägt den Titel "*Sorting of Motivated Agents – Empirical Evidence on Self-Selection into the German Police*" und thematisiert die Selbstselektion bestimmter Individuen in den Polizeiberuf. Diese experimentelle Studie beschäftigt sich mit der Frage, ob Menschen, die sich für den Polizeiberuf bewerben, im besonderen Maße bereit sind Normen – auch zu eigenen Kosten – durchzusetzen und ob sie sich hinsichtlich ihrer Präferenzen in Bezug auf ihr Normdurchsetzungsverhalten in den Polizeiberuf selektieren.

Die experimentelle Untersuchung selbst ist durch Erkenntnisse aus theoretischen Arbeiten motiviert, wobei sich in dieser Fragestellung zwei bedeutende Sichtweisen gegenüber stehen. Die Frage nach der beruflichen Spezialisierung, durch Lernprozesse oder durch die Arbeit an sich, sowie die Annahme der Selbstselektion bestimmter Typen in bestimmte Berufe. Während die erste Sichtweise in der Psychologie am weitesten verbreitet ist und durch Arbeiten von Kohn and Schooler (1983) oder Lempert (2009) beschrieben ist, werden in der Ökonomie vor allem die Ansätze zur Selbstselektion in Berufe entsprechend der individuellen Präferenzen diskutiert (vgl. Besley and Ghatak, 2005; Prendergast, 2007; Delfgaauw and Dur, 2008; Kosfeld and von Siemens, 2009). Bei Betrachtung dieser vorwiegend theoretischen Ansätze ist festzustellen, dass ein Nachweis einer solchen Selbstselektion mit realen Probanden in der Phase ihrer Berufswahl bisher nicht erbracht werden konnte. Ziel dieser Abhandlung ist es daher, experimentell die Existenz von Selbstselektion in einen Beruf anhand einer geeigneten Kenngröße nachzuweisen und diese auf ihre Robustheit zu überprüfen.

Die Grundannahme zur Ermittlung einer solchen Kenngröße ist die Tatsache, dass sowohl soziale als auch ökonomische Interaktionen durch das Vorhandensein von Normen beeinflusst werden. Einer Definition von Williams (1986) folgend kann eine soziale Norm als eine Handlungsanweisung bzw. als eine Referenz angesehen werden, nach welcher Verhalten bewertet wird und für angemessen bzw. unangemessen erachtet wird. Blake and Davis (1964) verstehen Normen als Verhaltensregeln, die durch Sanktionen gestützt werden. Doch was geschieht, wenn unser Gegenüber sich einer Norm zuwider verhält und dies zum eigenen Nachteil gereicht? Gibt es bestimmte Personen, die uns helfen müssen bzw. die bereit sind uns zu helfen, auch wenn sie dabei selbst einen Nachteil in Kauf nehmen müssen? Die Polizei, als Trägerin der exekutiven Gewalt in einem demokratischen Rechtsstaat, stellt dabei eine Organisation dar, welcher die Aufgabe der Rechtsdurchsetzung und Strafverfolgung zuteilwird. Die Bereitschaft zur Normdurchsetzung ist somit nicht nur formale Notwendigkeit, sondern ist in hohem Maße von der intrinsischen Motivation eines jeden Beamten abhängig.

Dank der Kooperation mit den hessischen und den rheinland-pfälzischen Polizeiakademien sowie der Deutschen Hochschule der Polizei (DHPol) war es möglich, eine Untersuchung mit Polizeibewerbern aus zwei verschiedenen Bundesländern im Jahr 2011 durchzuführen. Dabei lag der Zeitpunkt der Datenerhebung noch vor dem tatsächlichen Auswahlverfahren. Dies erlaubte nicht nur eine klare Identifikation eines Selbstselektionseffektes, sondern schloss konfligierende Effekte aus, wie etwa eine Personalselektion durch die Landespolizeiakademien oder eine Prägung infolge der Ausbildung bzw. durch die Ausübung des Polizeiberufes selbst.

Die Datenerhebung erfolgte mithilfe eines eigens hierfür entwickelten Online Experimental Systems. Insgesamt lagen nach Abschluss der Erhebung Daten von über 3500 Teilnehmern vor[6]. Das Timing des Experimentes stellte alle Probanden vor zwei Entscheidungssituationen eines Vertrauensspiels im Sinne von Berg et al. (1995), zunächst in der Rolle eines Senders und anschließend in der Rolle eines Empfängers. In einer weiteren Stufe, dem Normdurchsetzungsspiel, wurden die Teilnehmer in die Rolle einer dritten Partei versetzt, welche die Handlungen anderer Teilnehmer in deren Rolle als Sender und als Empfänger beobachten konnte. Dieser unbeteiligte Spieler bekam daraufhin die Möglichkeit unter Verwendung der Strategiemethode nach Selten (1967) von seiner persönlichen Anfangsausstattung Belohnungs- bzw. Abzugspunkte zu vergeben. Im Anschluss wurden die Teilnehmer gebeten, einen Fragebogen bezüglich ihrer persönlichen Einstellung und individuellen Merkmalen zu beantworten.

Um die Forschungsfrage einer möglichen Selbstselektion bestimmter Individuen in Hinblick auf ihr Normdurchsetzungsverhalten beantworten zu können, wurden insgesamt drei Gruppen von Teilnehmern eingeladen. Die erste Gruppe bestand aus Polizeibewerbern der Bundesländer Hessen und Rheinland-Pfalz, welche im Zuge ihrer Bewerbung eine Einladungskarte zu unserem Experiment erhalten haben. Die zweite Gruppe fungierte als Vergleichsgruppe zu den Polizeibewerbern und bestand aus Abiturienten des Landes Hessen[7]. Beide Gruppen haben dabei sowohl das Vertrauensspiel in beiden Rollen als auch das Normdurchsetzungsspiel in der Rolle eines unbeteiligten Dritten gespielt. Die Bereitschaft auf eigene Auszahlung zu verzichten, um damit die Auszahlungen von Sender und Empfänger zu beeinflussen, stellt dabei das Maß für das Normdurchsetzungsverhalten dar. Die dritte Gruppe der Teilnehmer schließlich setzte sich aus Studenten der Goethe-Universität Frankfurt zusammen. Diese Gruppe übernahm im Experiment die Rollen des Senders und des Empfängers zur Auszahlung der Entscheidungen der ersten beiden Gruppen. Zusätzlich wurden diese nach ihren Einschätzungen über das Nor-

[6]Die gesamte Datenerhebung bildete die Basis für mehrere Forschungsarbeiten, die im Rahmen eines gemeinsamen Forschungsprojektes der Goethe-Universität Frankfurt und der Deutschen Hochschule der Polizei (DHPol) durchgeführt wurden. In dieser Arbeit werden 2390 Teilnehmer berücksichtigt. Die Antworten der übrigen Teilnehmer sind Gegenstand anderer Untersuchungen und werden an dieser Stelle vernachlässigt.

[7]Für die Ergreifung des Polizeiberufes in Hessen und Rheinland-Pfalz ist die allgemeine (Fach-) Hochschulreife Voraussetzung. Abiturienten stellen daher sowohl aufgrund ihres Bildungsniveaus, der weitgehend übereinstimmenden regionalen Herkunft als auch wegen des bevorstehenden Berufsstartes eine natürliche Vergleichsgruppe dar.

mdurchsetzungsverhalten von Personen im Allgemeinen bzw. von Polizeibewerbern[8] befragt.

Die Auswertung der erhobenen Daten deutet auf vier zentrale und robuste Ergebnisse hin. Mehr als 90 Prozent aller Teilnehmer sind dazu bereit auf eine eigene Auszahlung zu verzichten, um einen Einfluss auf die Auszahlung von anderen zu nehmen. Polizeibewerber sind darüber hinaus bereit einen signifikant höheren Anteil ihrer Anfangsausstattung für eine solche Beeinflussung aufzuwenden. Da es zwischen Sender und Empfänger im Vertrauensspiel zu unterschiedlichen Auszahlungskombinationen kommen kann, ist jedoch eine reine Auswertung der durchschnittlichen Normdurchsetzungsbereitschaft nicht ausreichend, so dass die Entscheidungen differenzierter zu betrachten sind. Die Auszahlungskombinationen ergeben sich dabei wie folgt: Ist ein Sender bereit einen Teil seines Vermögens an den Empfänger zu transferieren, so wird dieser Transfer vom Experimentator verdreifacht. Der Sender entscheidet somit über die Effizienz des Vertrauensspiels. Ein Empfänger hingegen entscheidet nur zwischen den Möglichkeiten die Hälfte seines erspielten Vermögens an den Sender zurück zu transferieren oder alles zu behalten. Er entscheidet somit über die Aufteilung der Gewinne im Vertrauensspiel. Es zeigt sich, dass vertrauensvolles – und somit effizientes Verhalten – belohnt wird, wohingegen eine Abweichung von der Gleichverteilungsnorm zu Sanktionen führt. Dabei hängt die Stärke etwa einer Sanktion nur davon ab, ob gegen eine Norm verstoßen worden ist und nicht von der Höhe des entstandenen Schadens, wohingegen eine Belohnung auch an die gezeigte Kooperationsbereitschaft geknüpft ist. Polizeibewerber offenbaren dabei im Allgemeinen eine höhere Bereitschaft zur Durchsetzung dieser Normen, indem sie die Auszahlungen von Sender und Empfänger signifikant stärker und häufiger beeinflussen als die Teilnehmer in der Kontrollgruppe.

Des Weiteren identifiziert das Normdurchsetzungsexperiment entgegen der gängigen Theorie von Prendergast (2007) keinen ein-direktionalen Bias. Vielmehr zeigen die Daten, dass Polizeibewerber sowohl mehr bestrafen als auch mehr belohnen als Bewerber für andere Berufe. Somit lassen unsere Ergebnisse den Schluss zu, dass Menschen, die sich für den Polizeiberuf bewerben, per se eine höhere Bereitschaft aufzeigen Normen durchzusetzen. Ein systematischer Einfluss verschiedener individueller Charakteristika und Kontrollmaße, welcher die Unterschiede zwischen Polizeibewerbern und Kontrollgruppe erklären könnte, ließ sich nicht finden.

Mit unserer Studie ist es uns somit möglich, experimentell die Existenz einer Selbstselektion in den Polizeiberuf hinsichtlich des Normdurchsetzungsverhaltens nachzuweisen. In Bezug auf die Theorien zu Selbstselektion im Öffentlichen Dienst (vgl. Besley and Ghatak (2005) und Prendergast (2007)) sprechen unsere Ergebnisse dafür, dass Polizeibewerber eher dazu bereit sind auf einen monetären Nutzen zu verzichten, um gemäß ihrer eigenen Präferenzen zu handeln

[8]Dies war nur für Studenten der Fall, die mit einem Polizeibewerber in der Rolle des Normdurchsetzers gespielt haben.

und dadurch einen zusätzlichen nicht-monetären Nutzen zu erhalten. Die Bedeutung der Identifikation einer solchen Selbstselektion wird in Hinblick auf die Aufgaben und die Anforderungen für den Polizeiberuf deutlich. So ist etwa ein hohes Maß an Vertrauen in die Rolle und die Handlungsbereitschaft der Polizei für eine erfolgreiche Strafverfolgung unabdinglich.

Ungeklärt ist allerdings die Frage, inwieweit das polizeiliche Auswahlverfahren bzw. der Selektionsprozess seitens der Landespolizeischule tatsächlich auch Individuen mit einer erhöhten Normdurchsetzungsbereitschaft auswählt. Ebenso zu beantworten bleibt die Frage der Auswirkung von Formung bzw. Prägung durch die Polizeiausbildung auf das bei der Bewerbung beobachtete erhöhte Normdurchsetzungsverhalten. Diese Fragen bilden die Grundlage für die zweite wissenschaftliche Abhandlung dieser Dissertation.

## Selection and formation of motivated agents – empirical evidence from the German Police

Die zweite Abhandlung greift die Erkenntnisse des vorherigen Kapitels auf und beleuchtet den Unterschied zwischen denjenigen Individuen, die sich für eine Bewerbung bei der Polizei entschieden haben und solchen, die auch tatsächlich für den Polizeidienst ausgewählt wurden. Die Arbeit trägt den Titel "*Selection and formation of motivated agents – empirical evidence from the German Police*".

Der Prozess der Auswahl und der Ausbildung von Mitarbeitern ist eine der zentralen Fragen des erfolgreichen Handelns und der Nachhaltigkeit von Unternehmen. Die fundamentale ökonomische Herausforderung kann dabei wie folgt beschrieben werden: "The task of hiring is one of matching with costly search and bilateral information. Job seekers have varying levels of aptitude, skill and motivation, while firms have varying needs for these attributes" (Oyer and Schaefer, 2011). Es beschreibt somit die Allokation der Arbeitsuchenden mit ihren spezifischen Begabungen, Fähigkeiten und ihrer Motivation in Unternehmen, welche diese Eigenschaften auch benötigen. Eine solche Allokation kann jedoch mit erheblichen Suchkosten verbunden sein und durch die falsche Darstellung der eigenen Qualität, sowohl der Arbeitsuchenden als auch der Unternehmen, erschwert werden. In den letzten Dekaden trat daher die Frage der Selbstselektion spezieller Individuen hinsichtlich ihrer Präferenzen in bestimmte Unternehmen in den Vordergrund. Unter anderem haben Studien von Homann (2012) und Richter (2013) in einer Untersuchung von Bewerbern für den Polizeiberuf gezeigt, dass eine solche Selbstselektion durch Experimente nachweisbar ist und dass Bewerber für diesen Beruf hinsichtlich ihrer Vertrauenswürdigkeit und ihrer Normdurchsetzungsbereitschaft ein anderes Verhalten an den Tag legen als vergleichbare Probanden, die sich für andere Berufe bewerben. Ob dieses

Verhalten auch tatsächlich von der Organisation, in diesem Fall der Polizei, gewünscht ist und ob diese speziellen Bewerber als Polizeibeamte ausgewählt werden, ist allerdings bislang unerforscht. Des Weiteren bleibt auch die Frage offen, ob das im Bewerbungsprozess offenbarte und erhobene Verhalten im Experiment ein stabiles Persönlichkeitsmerkmal darstellt oder ob es sich durch Formung und Prägung im Rahmen der Polizeiausbildung verändert[9]. Ziel dieser Abhandlung ist es daher, experimentell das während der Selbstselektion aufgezeigte Verhalten bei Polizeianwärtern in ihrer Ausbildung anhand einer geeigneten Kenngröße nachzuweisen und diese auf ihre Persistenz sowie Robustheit zu überprüfen.

Wie bereits in der vorangegangen Abhandlung beschrieben, wird die Bereitschaft in einem Normdurchsetzungsspiel Einfluss auf die Auszahlungen anderer Teilnehmer zu nehmen als Kenngröße gewählt. Es wird angenommen, dass diese Bereitschaft mehr als eine formale Notwendigkeit sowohl in der Ausbildung als auch im späteren Berufsalltag darstellt und somit von der eigenen intrinsischen Motivation abhängig ist.

Dank der Kooperation mit der hessischen Polizeiakademie (HPA) sowie der Deutschen Hochschule der Polizei (DHPol) war es im Jahr 2011 möglich, die Untersuchung mit Polizeibewerbern sowie mit Polizeianwärtern des Landes Hessen in jedem der drei Jahre ihrer Ausbildung durchzuführen. Aufgrund von datenschutzrechtlichen Bestimmungen war es nicht möglich, Polizeibewerber nach dem Auswahlverfahren zu identifizieren und etwa mit abgelehnten Bewerbern zu vergleichen. Das Experiment und damit der Vergleich der beiden Probandengruppen wurde daher in einem sogenannten "cross sectional" Design durchgeführt. Es wird angenommen, dass sich Polizeibewerber und Polizeianwärter – im Besonderen in ihrem ersten Jahr – nur hinsichtlich ihrer Auswahl für den Polizeidienst unterscheiden und somit aus derselben Grundpopulation stammen. Sie bilden daher die erste Vergleichsgruppe. Ferner wird angenommen, dass sich Polizeianwärter in den verschiedenen Phasen ihrer Ausbildung hinsichtlich ihres Verhaltens im Normdurchsetzungsspiel nicht voneinander unterscheiden, mit der Konsequenz, dass die Verhaltensmuster über die Dauer der Ausbildung stabil sind. Auch hier wurde ein "cross sectional" Vergleich durchgeführt, da eine langfristige Beobachtung einzelner Polizeianwärter nicht möglich war.

Um der Forschungsfrage nachzugehen, ob die während der Selbstselektion in den Polizeiberuf identifizierten Verhaltensmuster auch bei Polizeianwärtern in ihrer Ausbildung zu beobachten sind, wurden insgesamt drei Gruppen von Teilnehmern eingeladen. Die erste Gruppe bestand aus Polizeibewerbern des Bundeslands Hessen, welche im Zuge ihrer Bewerbung eine Einladungskarte erhalten hatten. Die zweite Gruppe bestand aus Polizeianwärtern, die an vier

[9]Insbesondere die Arbeit von Rafael Behr (2006) deutet darauf hin, dass in der Polizei eine sog. "Cop Culture" existiert, die ethnozentrisch ausgerichtet ist und den Zusammenhalt festigt. Es wird angenommen, dass eine solche Organisationskultur Verhaltensmuster ändern und individuellen Ausprägungen entgegenwirken kann.

Standorten der Hessischen Hochschule für Polizei und Verwaltung ihr Bachelorstudium der Schutz- und Kriminalpolizei absolvieren[10]. Sie stellt eine Vergleichsgruppe zu den Bewerbern dar, die den Selektionsprozess erfolgreich absolviert hat.

Beide Gruppen haben im Online Experiment sowohl das Vertrauensspiel in der Rolle des Senders und des Empfängers als auch das Normdurchsetzungsspiel in der Rolle eines unbeteiligten dritten Entscheiders gespielt. Die Bereitschaft auf eigene Auszahlung zu verzichten, um damit die Auszahlungen von Sender und Empfänger zu beeinflussen, stellt dabei das Maß für das Normdurchsetzungsverhalten dar und ist damit die Kenngröße für den Vergleich von Bewerbern und selektierten bzw. in der Formung befindlichen Polizeianwärtern. Die dritte Gruppe der Teilnehmer setzte sich nun abermals aus Studenten der Goethe-Universität Frankfurt zusammen. Diese Gruppe übernahm im Experiment die Rollen des Senders und des Empfängers zur Auszahlung der Entscheidungen der ersten beiden Gruppen.

Unter Verwendung und Replikation des Rahmenwerks aus Richter (2013) war es möglich einen direkten Vergleich der Polizeibewerber und Polizeianwärter durchzuführen. In der ersten definierten Vergleichsgruppe wurde der Frage nachgegangen, ob sich Polizeianwärter am Beginn ihres Studiums von Bewerbern für den Polizeiberuf unterscheiden. Die Untersuchung des Verhaltens anhand der Kenngröße zeigt dabei keine nennenswerten Unterschiede. Es lässt sich beobachten, dass von beiden Gruppen sowohl Belohnungen als auch Abzüge an Teilnehmer in der Rolle von Sender oder Empfänger vergeben werden. Beide Gruppen sind bereit andere Menschen für ihr effizientes und reziprokes Verhalten im Experiment zu belohnen. Des Weiteren sind sie bereit auf eigene Auszahlung zu verzichten, um Teilnehmer, die sich wider die Fairnessnorm verhalten haben, mit Abzugspunkten zu versehen. Das im Experiment beobachtete Verhalten und die Ähnlichkeit der persönlichen Charakteristika zeigen, dass durch den Selektionsprozess[11] der Polizei tatsächlich diejenigen ausgewählt wurden, die den Bewerbern hinsichtlich der Ausstattung ihrer Präferenzen ähneln.

Bei Betrachtung der zweiten Vergleichsgruppe ist es außerdem möglich, Aussagen über die Stabilität der identifizierten Präferenzen zu verschiedenen Zeitpunkten (also im ersten,

[10]Das Bachelorstudium unterteilt sich in fachtheoretische und fachpraktische Studienabschnitte und dauert grundsätzlich drei Jahre. Nach dem ersten theoretischen Studienabschnitt folgt das Grundlagentraining in der Bereitschaftspolizei. Dem darauffolgenden Grundlagenpraktikum im polizeilichen Einzeldienst schließen sich zwei weitere Studienabschnitte mit fachtheoretischen Inhalten an. Im anschließenden Fachpraktikum versieht man seinen Dienst auf einem Polizeirevier einer Polizeistation oder in einem Kriminalkommissariat. Der letzte theoretische Studienabschnitt beinhaltet die Bachelorthesis, eine wissenschaftlichen Abschlussarbeit, in welcher praxisrelevante Fragestellungen aus den Inhalten des Studiums zu thematisieren sind. Diese Prüfung besteht aus einem schriftlichen und einem mündlichen (Kolloquium) Teil (vgl. offizieller Internetauftritt der Polizei Hessen, http://www.vfh.hessen.de/irj/VFH_Internet?cid=fa35ec2d774c7d685f06fc61040000e3,30.06.2013)

[11]Weitere Informationen zum formalen Selektionsprozess und den Auswahlkriterien des Eignungsauswahlzentrums des Polizeipsychologischen Dienstes Hessen im offiziellen Internetauftritt der Polizei Hessen, http://www.polizei.hessen.de/icc/internetzentral/nav/e73/e7340527-bab6-4021-3104-182109241c24.htm, 30.06.2013

zweiten und dritten Jahr ihrer Ausbildung) zu treffen. Abermals zeigt der Vergleich des Verhaltens im Normdurchsetzungsexperiment keine systematisch signifikanten Unterschiede unter den Polizeianwärtern. Diese vergeben sowohl Belohnungen als auch Abzüge an Teilnehmer in der Rolle von Sender oder Empfänger. Unter der Annahme einer beginnenden Sozialisation und des Einflusses einer "Cop Culture" zeigt sich auch in höheren Jahrgängen die Bereitschaft, andere Menschen für ihr effizientes und reziprokes Verhalten im Experiment zu belohnen. Ebenso wird auf eigene Auszahlung verzichtet, um Teilnehmer, die sich wider die Fairnessnorm verhalten haben, mit Abzugspunkten zu versehen. Diese Ergebnisse lassen sich, wie bei der ersten Vergleichsgruppe, nicht durch Unterschiede in den persönlichen Charakteristika oder durch sozio-demografische Faktoren erklären, sondern deuten auf die Stabilität dieser über die Selektion und Ausbildung wirkenden Verhaltensausprägungen, hin.

Auch im Rahmen dieser Studie werden die Annahmen hinsichtlich der Selbstselektion von Menschen mit einseitig verzerrter Motivation – also solchen, die nur belohnen und solchen, die nur bestrafen – nicht durch im Feld beobachtetes Verhalten bestätigt. Prendergast (2007) beschreibt, dass Menschen mit hinreichend verzerrten Präferenzen einen zusätzlichen Nutzen erhalten, wenn sie sich in bestimmte Berufe selektieren. Demnach würden Bürokratien Personen anziehen, die eine einseitige Verzerrung dieser Präferenzen aufweisen und nicht solche, die über höhere Motivation über das gesamte Spektrum verfügen. Die Erkenntnisse der vorliegenden Arbeit zeigen nun, dass auch bei Personen, die von der Organisation ausgewählt wurden, gemischte Motive zu beobachten sind. So sind Polizeibewerber eher dazu bereit, auf eigene Auszahlung zu verzichten (sowohl zum Zwecke der Belohnung als auch zur Bestrafung) als Menschen, die sich in andere Berufe selektieren. Da sich keine Unterschiede auf dem gesamten Spektrum der Normdurchsetzung zwischen den Polizeibewerbern und den selektierten Polizeianwärtern feststellen lassen, stellt das Auswahlverfahren der Polizei keinen einseitig verzerrten Filter dar.

Die geringe Beobachtungszahl ist jedoch noch nicht ausreichend, um die gewonnen Erkenntnisse auf die Gesamtpopulation der Polizeianwärter übertragen zu können. Die Einschränkungen des "cross sectional designs" ließen sich durch die Etablierung einer Panelstruktur und damit der Verfolgung von Bewerbern und Anwärtern über ihre Laufbahn hinweg überwinden, sind aber aufgrund von Datenschutzbestimmungen in dieser Studie nicht möglich gewesen.

Ebenso ungeklärt ist die Frage, ob die im Experiment beobachteten Verhaltensweisen auch bei aktiven Polizeibeamten, welche der Einsatzrealität ausgesetzt sind, anzutreffen sind. Da es bei der Formung und der Prägung im Rahmen der Ausbildung nur zu ersten Berührungen mit dieser Einsatzrealität gekommen ist, wäre eine systematische Analyse unter Berücksichtigung von Erfahrung und Erleben bei (erfahrenen) Polizeibeamten eine sinnvolle Erweiterung.

Letztlich bleibt noch die Frage der Übertragbarkeit der Ergebnisse auf andere Berufe zu beantworten. So wird angenommen, dass für andere Berufe ebenso auch andere Motivationsausstattungen benötigt werden, welche dem Individuum einen intrinsischen Nutzen geben und

damit etwaiges erlittenes Arbeitsleid kompensieren. Die Anwendung der in dieser Arbeit verwendeten Methodik erlaubt eine solche Untersuchung anderer Berufsgruppen und wird sicherlich Gegenstand zukünftiger Forschung sein.

## Selectivity and opportunism: two dimensions of gender differences in trust games and network formation

Während sich die vorangegangenen Arbeiten mit der Fragestellung der Selbstselektion bei der Berufswahl und anschließender Selektion durch die Organisation beschäftigt haben, beleuchtet diese Arbeit die geschlechterspezifischen Unterschiede bei der Wahl von Partnern und dem Aufbau eines sozialen Netzwerkes. Die dritte wissenschaftliche Abhandlung dieser Dissertation trägt damit den Titel "*Selectivity and opportunism: two dimensions of gender differences in trust games and network formation*" und wurde zusammen mit Guido Friebel, Marie Lalanne, Paul Seabright und Peter Schwardmann verfasst. In ihr werden spezifische Teilnehmer untersucht, die in einem sogenannten Vertrauensspiel Entscheidungen bezüglich der Interaktion mit anderen Teilnehmern treffen.

Grundüberlegung der Arbeit ist, dass Individuen in langfristigen Partnerschaften einen hohen Einsatz an Zeit, Anstrengung und anderer Ressourcen aufbringen müssen. Nun stellt sich die Frage, auf welche Art und auf welcher Grundlage eine solche Partnerschaft eingegangen wird. In dieser Betrachtung bleibt jedoch zunächst ungeklärt, ob es dabei auch geschlechterspezifische Unterschiede gibt, etwa ob Männer und Frauen ihre sozialen Netzwerke anders aufbauen und auch anders pflegen. Ausgehend von Überlegungen der Theorie der sexuellen Selektion, die bereits 1871 von Charles Darwin formuliert worden ist, wird angenommen, dass die weiblichen Vertreter einer jeden Spezies in der Wahl ihrer Sexualpartner selektiver sind als die männlichen Vertreter. In einer Abhandlung von Trivers (1972) wird diese gesteigerte Selektivität bei Frauen durch die Asymmetrie in der Fürsorge nach der Geburt beschrieben. So sind etwa die Opportunitätskosten von Frauen nach einer Zusammenkunft mit einem Mann bedeutend höher, da sie zunächst den Nachwuchs umsorgen muss und nicht sofort einen anderen Partner wählen kann. Ein Mann hingegen ist in der Lage, auch nach der Zusammenkunft mit einer Frau eine neue Beziehung einzugehen, weswegen es wahrscheinlich ist, dass er sich opportunistischer gegenüber sich bietenden Gelegenheiten verhält. Diese Annahmen von Selektivität und differentiellem Opportunismus scheinen zunächst nur bezüglich der sexuellen Interaktion anwendbar zu sein.

Es wird jedoch angenommen, dass sich die gesteigerte Selektivität von Frauen auch in sozialen Interaktionen beobachten lassen kann. So nimmt etwa die Arbeit von Granovetter (1973) an, dass beträchtliche Unterschiede in der Art der Verbindung zweier Individuen beste-

hen. Es gibt demnach schwache Verbindungen oder "weak links" und starke Bande oder "strong ties". Paradoxerweise konnte im Rahmen der Jobsuche nachgewiesen werden, dass "weak links" vorteilhafter sind, da sie ein Mehr an neuen Informationen und Möglichkeiten bringen, wohingegen die gesteigerte Motivation und Anstrengung im Falle von "strong ties" dieses Mehr nicht zu genüge ausgleichen können. Empirische Arbeiten sowie Fallstudien konnten außerdem zeigen, dass Frauen im Vergleich zu Männern tendenziell soziale Netzwerke aufweisen, welche durch eine geringere Anzahl an "weak links" gekennzeichnet sind. Dies kann sowohl mit ihrer Art der Kommunikation zusammenhängen, wie Arbeiten von Friebel and Seabright (2011) zeigen, oder mit einer geringeren Opportunität. So zeigt etwa die Arbeit von Lalanne and Seabright (2011), dass die gesteigerte Opportunität bei Männern dazu führt, dass diese mehr in "weak links" investieren und bei Bedarf eher bereit sind von diesen einen Gefallen einzufordern. Diese Annahmen und Beobachtungen motivieren daher die systematische Untersuchung der geschlechterspezifischen Unterschiede in Bezug auf Selektivität und Opportunismus.

Um bestimmen zu können, wie sich Selektivität und Opportunismus auf soziale Interaktionen und die Bildung von sozialen Netzwerken auswirkt, formuliert diese Arbeit zwei Hypothesen, welche im Rahmen eines Experimentes untersucht werden. Die erste Hypothese mit der Bezeichnung Differential Selectivity nimmt an, dass Frauen beim Beginn einer neuen Partnerschaft selektiver vorgehen als Männer und sie daher weniger bereit sind in diese zu investieren. Die zweite Hypothese mit der Bezeichnung Differential Opportunism untersucht, ob die Bereitschaft von Frauen in eine neue Partnerschaft zu investieren weniger durch die verfügbaren Informationen über den ökonomischen Nutzen getrieben ist als die der Männer. Eine direkte Konsequenz dieser beiden Hypothesen wäre, dass sich die sozialen Netzwerke von Frauen und Männern unterschiedlich entwickeln, so dass Frauen ein weniger weit verzweigtes Netzwerk haben.

Um der Frage nachzugehen, wurde eine Untersuchung von Erstsemestern der Goethe-Universität Frankfurt in zwei Jahrgängen durchgeführt. Für diese Teilnehmergruppe wird angenommen, dass sie über so gut wie kein soziales Netzwerk an der Universität verfügt und dass sie noch nicht mit den zugrundeliegenden ökonomischen Konzepten vertraut ist. Am zweiten Tag der Einführungsveranstaltung des Fachbereiches Wirtschaftswissenschaften nahmen rund 90 Prozent aller Erstsemesterstudenten an der ersten Stufe dieser Studie teil. Alle Teilnehmer wurden zunächst gebeten ihre Kontaktdaten zur Verfügung zu stellen, um zu weiteren Teilen der Studie eingeladen werden zu können. Im Anschluss erhielten diese Teilnehmer einen Fragebogen, in welchem zunächst Fragen zu ihrem privaten sozialen Netzwerk, zu ihrem soziodemographischen Hintergrund und zu einer Risikoentscheidung beantwortet werden sollten. Zwei Wochen nach dieser Veranstaltung wurden alle Teilnehmer in das FLEX Labor der Goethe-Universität eingeladen, um an einem Experiment teilzunehmen. Den Abschluss der Datenerhebung bildete der Einsatz eines Online-Fragebogens am Ende des ersten Semesters, in welchem

das soziale Netzwerk der Teilnehmer an der Universität erhoben wurde. Anzunehmen war, dass sich dieses im Laufe des ersten Semesters weitestgehend entwickelt hat und dass die Verknüpfung von Fragebogen, Laborexperiment und Onlinefragebogen einen Einblick in die formulierten Hypothesen bietet.

Während die im Fragebogen erhobenen Daten rein interrogativer Natur waren, wurde das Verhalten der Teilnehmer in einer sozialen Interaktion in einem Laborexperiment erhoben. Die Teilnehmer spielten ein Vertrauensspiel[12] sowohl in der Rolle eines Senders als auch in der Rolle eines Empfängers. Der Sender verfügt dabei über eine gewisse Grundausstattung, welche er einem Empfänger überweisen kann. Jeder überwiesene Betrag wird dann vom Experimentator verdreifacht und an den Empfänger übergeben. Der Empfänger entscheidet nun, wie viel er wieder zurücküberweisen möchte. Die Teilnehmer wurden in der ersten Stufe des Experimentes gebeten dieses Spiel zweimal zu spielen, zunächst in der Rolle des Senders und dann in der Rolle des Empfängers. In einer zweiten Stufe wurde nun ein weiterer Teilnehmer der eigenen Gruppe zufällig zugewiesen, so dass ein jeder Sender nun die Möglichkeit erhielt, sowohl dem alten Partner als Empfänger als auch dem neuen Partner als Empfänger etwas zu überweisen. Ebenso bekam ein Teilnehmer in der Rolle des Empfängers in der zweiten Stufe die Möglichkeit, seinem alten Partner in der Rolle des Senders und/oder seinem neuen Partner in der Rolle des Senders etwas zurück zu transferieren. Das Vertrauensspiel wurde dabei in verschiedenen Treatments gespielt: NoVar als Grundtreatment; T1, ein Framing Treatment, in dem die Teilnehmer vor ihren Transferentscheidungen in der zweiten Stufe gefragt wurden, ob sie mit einem Teilnehmer spielen wollen; RG, ein Informationstreatment, in dem die Teilnehmer Informationen über das Geschlecht, Alter und Studienbeginn ihrer Partner erhielten; T1RG, eine Kombination aus den beiden vorherigen Treatments. Anhand dieser Treatments waren wir in der Lage, die Hypothesen zu differentieller Selektivität und zu differentiellem Opportunismus zu überprüfen und nachzuweisen.

Unser Haupttest für die differentielle Selektivität nahm an, dass ceteris paribus Frauen weniger bereit sind einen Transfer an einen neuen Partner zu leisten, sei es in der ersten Runde oder in der zweiten Runde mit einem anderen Partner. Diese Annahme wird durch das Verhalten der Teilnehmer im Experiment bestätigt, so dass signifikant geringere Transfers im Vergleich zu Männern beobachtet werden. Ein weiterer Nachweis der differentiellen Selektion wird bei der Betrachtung des T1 Treatments erbracht. So sind Frauen im Vergleich zu Männern seltener dazu bereit mit einem neuen Partner zu spielen, wenn sie direkt danach gefragt werden.

Der Test bezüglich des differentiellen Opportunismus betrachtet nun das Verhalten der Teil-

[12]Das Vertrauensspiel ist eines der am meisten verwendeten und am weitesten akzeptierten experimentellen Frameworks. Es wurde erstmals durch Kreps (1990) formuliert und in späteren Arbeiten von Berg et al. (1995) und Van Huyck et al. (1995) in ein stufenloses Design überführt.

nehmer in beiden Runden. In der ersten Runde erhielten die Teilnehmer keinerlei Informationen über ihren Partner, konnten sich allerdings erste Beliefs, im Sinne von Erwartungen, über dessen Bereitschaft zum Rücktransfer bilden. Die Betrachtung der Beliefs unter dem Gesichtspunkt der Hypothese des differentiellen Opportunismus zeigt, dass die Transfers von Frauen in der Rolle eines Senders weniger von ihren Beliefs über den Rücktransfer abhängen als die der Männer. Da dies auch mit einem übersteigertem Selbstbewusstsein der Männer erklärt werden könnte, wie es etwa in der Arbeit von Barber and Odean (2001) nachgewiesen worden ist, erfolgt ein weiterer Test der Hypothese in der zweiten Runde. In dieser wird der geschlechterspezifische Unterschied in der Bereitschaft einen Betrag an einen alten Partner zu transferieren als eine Funktion zwischen Transfer- und Rücktransferrate betrachtet. Abermals zeigt sich, dass Frauen weniger sensitiv auf Informationen bezüglich der Rücktransferrate reagieren.

Insgesamt deuten die Ergebnisse darauf hin, dass Frauen tatsächlich selektiver sind und dass dieser Effekt in der zweiten Runde des Experimentes sogar stärker ist. Weiterhin zeigt sich, dass Frauen weniger opportunistisch in ihrer Transferbereitschaft sind, sobald sie eine Partnerschaft eingegangen sind. Die Erkenntnisse sowie der beobachtete verstärkte Effekt in der zweiten Runde sprechen dabei sogar gegen die Überlegungen von differentiellem Selbstbewusstsein, wonach die Bereitschaft von Männern mit neuen Partnern zu spielen mit ihrem übersteigerten Selbstbewusstsein in Verbindung gebracht wird. Da Männer im Experiment stärker auf die Beliefs über das Verhalten von Anderen reagieren, unterstreicht dies die Hypothese zu differentiellem Opportunismus.

Zusammenfassend liefern die Ergebnisse dieser Arbeit einen Beitrag zum Verständnis der geschlechterspezifischen Unterschiede in der Frage: "Gibt es Unterschiede in der Art und Weise wie Männer und Frauen ihr soziales Netzwerk errichten und wenn ja, welche?". Während die Daten des Laborexperimentes unsere Hypothesen stützen können und andere Erklärungsansätze – wie etwa geschlechterspezifische Risikoaversion – keinen systematischen Einfluss haben, bleibt die Frage der Übertragbarkeit der gewonnenen Erkenntnisse auf das Verhalten außerhalb des Labors unbeantwortet. Eine zukünftige Forschungsfrage involviert daher die Analyse des sozialen Netzwerkes, welches die Studenten nach ihrem ersten Semester offengelegt haben. Falls das Verhalten im Labor auch mit der Größe und Form des sozialen Netzwerkes in Verbindung gebracht werden kann, ließen sich die getroffenen Aussagen auch auf die reale Welt übertragen.

# Antitrust, auditing and leniency programs: evidence from the laboratory

In der vierten wissenschaftlichen Abhandlung mit dem Titel *Antitrust, auditing and leniency programs: evidence from the laboratory*, die zusammen mit Mehdi Feizi and Ali Mazyaki verfasst worden ist, wird einer aktuellen Fragestellung der Industrieökonomie nachgegangen. Es wird untersucht, ob Teilnehmer, nachdem sie in der Rolle einer Firma ein Kartell gebildet haben, bereit sind in ein Straffreiheitsprogramm, ein "leniency program,", einzutreten und somit einer Strafverfolgung zu entgehen.

Adam Smith schrieb in seinem einflussreichen Werk "*An Inquiry into the Nature and Causes of the Wealth of Nations*" aus dem Jahre (1776) zunächst Folgendes: "[...] people of the same trade seldom meet together, even for merriment and diversion, but the conversion ends in a conspiracy against the public, or in some contrivance to raise prices. It is impossible indeed to prevent such meetings, by any law which either could be executed, or would be consistent with liberty and justice". Dieser Auffassung nach wird es stets, sei der Anlass auch noch so unbedeutend, dazu kommen, dass Menschen desselben Handwerks sich gegen das Allgemeinwohl verschwören werden. Die von Adam Smith vorgebrachten Annahmen konnten im sich rasch entwickelnden Amerika des 18. Jahrhunderts in der Tat beobachtet werden. Angesichts der Entstehung marktbeherrschender Trusts, Kartelle und Monopole verabschiedete die U.S. Regierung mit dem Sherman Act im Jahre 1890 ein Regel- und Gesetzeswerk, welches alle Verträge, Absprachen und Handlungen verbot, durch welche der freie Wettbewerb gefährdet wäre. Dabei ist unter einem Kartell eine Gruppe von Firmen zu verstehen, welche ihre illegalen Anstrengungen aufeinander abstimmt und so einen Einfluss auf Preissetzung, Angebot und Absatzkontingente zum Zwecke der Gewinnmaximierung nimmt.

Die Regulierung und Ahndung von marktbeeinflussenden Transaktionen und Handlungen ist seitdem Aufgabe der Kartellrechtsbehörden. Die Existenz eines Kartells ist jedoch nicht ohne weiteres nachweisbar, da diese naturgemäß verschwiegen sind und Beweise sich schwer erbringen lassen. Aus diesem Grund verfolgen Kartellrechtsbehörden in den letzten Dekaden die Strategie, Kartellmitglieder zu ermutigen solche illegale Unternehmungen selbst aufzudecken. Dabei wird dem Informanten, der als erstes das Schweigen bricht, ein "leniency program" angeboten, das ihn Straffreiheit oder einen in diesem Fall einen Straferlass bietet. Seit Einführung dieser Programme in den Vereinigten Staaten von Amerika im Jahre 1993 sind konventionelle Methoden Kartelle aufzudecken und Nachahmer abzuschrecken sukzessive abgebaut worden und durch ebendiese Straffreiheitsprogramme ersetzt worden. Es wird angenommen, dass diese Programme auf kurze Sicht die Aufdeckungsrate von Kartellen erhöhen, jedoch auf lange Sicht die Einigkeit in den übriggebliebenen Kartellen verstärkt wird (vgl. Spagnolo, 2000; Motta and

Polo, 2003; Bigoni et al., 2008).

Die empirische Literatur der letzten Jahre verdeutlicht, dass Straffreiheitsprogramme die Zahl der aufgedeckten Kartelle in bedeutendem Maße erhöht haben. Allerdings ist die schiere Anzahl der aufgedeckten und verfolgten Kartelle kein verlässlicher Indikator für die Effektivität der Bemühungen von Seiten der Kartellrechtsbehörden. Ebenso könnte eine hohe Anzahl an aufgedeckten Kartellen auf eine allgemein erhöhte Kartellaktivität zurückzuführen sein und zu einer hohen Effizienz der übrigen Kartelle führen. Um der Frage nachzugehen, ob Straffreiheitsprogramme tatsächlich zu einer Reduktion der Kartellpopulation führen können und wie es sich mit den übriggebliebenen Kartellen verhält, bieten Experimente aufgrund ihrer kontrollierten und beobachtbaren Umgebung ein nützliches Hilfsmittel. Da natürliche Experimente nicht möglich sind und die aufkeimende spieltheoretische Betrachtung zu widersprüchlichen Ergebnissen führt, treten Laborexperimente als Instrumente zur systematischen Untersuchung von Kartellrechtsrichtlinien in den Vordergrund. In dieser Abhandlung werden daher unter der Verwendung eines Experimentes die Effekte eines Straffreiheitsprogramms auf die Kartellabschreckung, -stabilität, -dauer und das Preissetzungsverhalten untersucht. Hierbei interagieren je drei Probanden als Unternehmen – mit der Möglichkeit der Kommunikation und damit Kartellbildung zum Zwecke der Preissetzung – und ein Proband in der Rolle einer Kartellrechtsbehörde in einer Gruppe. Der Proband in der Rolle einer Kartellrechtsbehörde hat dabei die Möglichkeit, sein eigenes Anstrengungsniveau zu wählen und somit die Entdeckungswahrscheinlichkeit eines gebildeten Kartells zu beeinflussen. Um die Auswirkung des Straffreiheitsprogramms untersuchen zu können, erhalten einige Probanden in der Rolle der Firmen die Möglichkeit, sich nach ihrer Kommunikations- und Preissetzungsentscheidung in ein Straffreiheitsprogramm zu selektieren und ihre Handlungen der Kartellrechtsbehörde zu offenbaren.

Um der Forschungsfrage nachzugehen, ob Straffreiheitsprogramme tatsächlich dazu führen, dass weniger Kartelle geformt werden oder ob sich sogar gegenteilige Effekte einstellen, wurde ein Experiment am FLEX Labor mit Studenten der Goethe-Universität Frankfurt der verschiedensten Fachrichtungen durchgeführt. Insgesamt wurden dazu 88 Teilnehmer eingeladen, die in Gruppen von vier Probanden eingeteilt wurden. Je drei Probanden einer Gruppe wurde zufällig die Rolle einer Firma zugewiesen, während dem Vierten die Rolle einer Kartellrechtsbehörde zugelost wurde. In zwei Treatments zu je 44 Probanden spielten die Teilnehmer zwanzig Runden lang je ein Bertrand Preissetzungsspiel im Sinne von Dufwenberg and Gneezy (2000), entweder mit der Möglichkeit ein Straffreiheitsprogramm zu wählen oder nicht. Ohne ein solches Programm war die Aufdeckung der Kommunikation alleine von der gewählten Entdeckungswahrscheinlichkeit des vierten Spielers abhängig.

Die Beobachtungen und der Vergleich des Verhaltens der Probanden im Labor deuten darauf hin, dass Straffreiheitsprogramme diverse Effekte haben und somit eine eindeutige Identifika-

tion ihrer Effektivität nicht ohne weiteres möglich ist. Für das wiederholte Bertrand Preissetzungsspiel finden sich Hinweise darauf, dass die Einführung des Straffreiheitsprogramms die Kartellstärke und Bestandsdauer verringert. Weiterhin schreckt es Probanden von einer bewussten Kommunikation und damit der Bildung eines Kartells ab. Interessanterweise hat die Möglichkeit der Teilnahme an einem Straffreiheitsprogram bei Kartellen, die dennoch geformt werden, den Effekt, dass diese sich auf einen höheren Preis einigen können. Es ist anzunehmen, dass dies das Resultat der glaubwürdigen Drohung der Offenlegung der Kartellaktivität ist. Eine Besonderheit des verwendeten experimentellen Designs betrifft den Handlungsspielraum des Probanden in der Rolle der Kartellrechtsbehörde. Während in anderen Experimenten dieser als ein exogener Spieler mit einer festen Entdeckungswahrscheinlichkeit modelliert ist, erlaubt die verwendete Umgebung eine Anpassung seines Anstrengungsniveaus, um Kommunikation und damit Kartelle offenlegen zu können. Es zeigt sich, dass in Anwesenheit eines Straffreiheitsprogramms eine Substitution von Anstrengung zu Gunsten einer Mitteilung eines Informanten stattfindet. Aufgrund der geringen unabhängigen Beobachtungszahl, sowohl auf Gruppenebene als auch auf Ebene der Kartellbehörde, offenbart sich dieser Effekt allerdings als nicht ausreichend signifikant. Eine weitere Untersuchung mit gesteigerter Teilnehmerzahl und differenzierteren Treatments könnte weitere Einblicke in die beobachteten Effekte geben.

Ebenso unterliegt diesem ersten Gang der Untersuchung kein ausgereiftes spieltheoretisches Modell, welches erlauben würde, präzise und verlässliche Vorhersagen zu treffen. Die in der vorliegenden Abhandlung eingesetzten Experimente und Treatments haben somit einen explorativen Charakter, welcher durch verschiedene Theorien motiviert, aber nicht durch einen vereinheitlichten Ansatz gestützt wird. Sie bietet jedoch aufgrund der getroffenen Annahmen bezüglich des Preissystems und der Homogenität von Firmen und Märkten einen Ansatz für zukünftige Überlegungen und erweiterte experimentelle Untersuchungen.

# Schlussbemerkung

In ihrer Gesamtheit liefert meine Dissertation Antworten auf personalpolitische, soziale und industrieökonomische Fragestellungen. So können die Erkenntnisse im Bereich der Personalauswahl und der Nachweis einer Selbstselektion in bestimmte Berufe helfen, zukünftige Arbeitnehmer nicht nur hinsichtlich ihrer formalen Eignung in eine Organisation einzustellen, sondern ebenso hinsichtlich ihrer intrinsischen Motivation. Da sowohl angenommen als auch gezeigt werden kann, dass diese Eigenschaften während der Ausbildungsphase und somit der Formung eines neues Mitarbeiters stabil sind, hat eine Selbstselektion der "richtigen" Menschen in das "richtige" Unternehmen auch eine direkte Auswirkung auf deren spätere Anstrengung.

Weiterhin zeigt die Arbeit zu den Grundüberlegungen bei der Wahl des sozialen Netzwerkes, dass geschlechterspezifische Unterschiede eine große Rolle spielen können. Sei es nun beruflich, etwa bei der Jobsuche, oder im privaten Umfeld, bei der Partnerwahl: soziale Interaktionen sind omnipräsent, und ihr Verständnis gilt seit je her als Ziel verschiedenster wissenschaftlicher Disziplinen.

Zuletzt werden in dieser Dissertation auch Fragen der Industrieökonomie behandelt, welche die Interaktion von Menschen im Rahmen eines ökonomischen Umfelds betrachten und illegale Handlungsweisen zu beschreiben und zu verhindern versuchen. Die Ergebnisse helfen hier ein Grundverständnis bezüglich bestimmter Entscheidungen, wie etwa ein Kartell zu bilden, es aufrecht zu erhalten oder es als ein sogenannter "Whistleblower" an eine Kartellrechtsbehörde zu melden, zu erhalten.

Meine Dissertation zeigt außerdem, dass der Einsatz einer Vielzahl an Methoden der experimentellen Wirtschaftsforschung, darunter Online Experimente, Laborexperimente sowie Befragungen, zu einem tiefergehenden Erkenntnisgewinn führen können. Die Beobachtung von ökonomisch relevantem Entscheidungsverhalten in kontrollierten und/oder strukturierten Umgebungen wird daher meiner Meinung nach auch in Zukunft zum Verständnis menschlichen Handelns beitragen. In diesem Sinne bietet die vorliegende Arbeit – gleich den Arbeiten anderer Experimentalökonomen – einzelne Bausteine, welche es in der Zukunft der experimentellen Wirtschaftsforschung in ein vereinheitlichtes Modell zusammenzuführen gilt.

# Chapter 2

# Sorting of Motivated Agents – Empirical Evidence on Self-Selection into the German Police

Bernard Richter
*Goethe University, Frankfurt*

**Abstract**

Many situations in economic interaction need a framework in which norms can be enforced. The enforcement should be conducted by agents who are motivated to exert effort because they care about their actions, rather than being motivated by their monetary payoff. The self-selection of certain people into the police profession, as a norm enforcing institution, is the focus of this paper. It shows, that people who apply to join the police show a higher willingness to enforce norms than those applying for other jobs. The motives behind this enforcement are efficiency and punishment of deviant behavior. The observed differences are stable when personal characteristics are controlled for. The data tends to confirm a self-selection of a mixed-motive type of people for the police, rather than a bifurcation into altruistic and hostile only types.

JEL-Classification: C72, C93, D03, J24
Keywords: Self-Selection, Police Applicants, Field Experiment, Norm Enforcement, Punishments, Rewards

## 2.1 Introduction

There are many situations in social and economic interactions in which people have to trust other people and need to be trusted themselves. If we expect our counterpart to behave in a certain way, we rely on the fact that he will abide by the prevailing social norms, which control our behavior as well as the behavior of others. These social norms can be seen as certain rules of conduct and provide a standard by reference to which behavior is judged and approved or disapproved[1]. A norm in this sense is not a statistical average of actual behavior, but rather a culturally shared definition of desirable behavior. Examples can be seen in the way people

[1]For an extensive definition and discussion see Williams (1986, p.204).

conduct trade, engage in religious worship or play games in a more or less standardized manner. But norms are more than sheer uniformity in human behavior. Since uniformity can come from a simple common stimulus, the great majority of important social interactions are guided by norms. According to this definition and to current research presented in this work, it seems that the evaluation and enforcement of norms is of key importance in sustaining relationships in modern societies[2]. But what if our actions are not reciprocated in the way we expect them to be and we face a deviation? How can one be helped? When it comes to the enforcement of norms, two main questions arise: How are norms enforced – simply by obeying the law or are there individual preferences that influence the decision? And, consequently, who enforces social norms – all people of the society or are there certain types of persons we expect to enforce them?

As children we were told to search for people who have the legitimacy and the duty to help us, such as policemen or similar men in uniform. We expect these people to share special characteristics in dealing with social norms and regard them as more trustworthy than the general population. But why should these people be willing to provide effort for the enforcement of norms and therefore be willing to help us? Two possible reasons for such effort among the group of policemen are possible: first, they are obliged to, due to the formal characteristics of their job[3] and second, they want to, due to their inherent social preferences[4] and because the outcomes of their actions matter to them intrinsically[5].

Interestingly, there is no empirical evidence that police officers, for example, are indeed willing to enforce social norms in a different way than other people. This chapter contains a first and independent analysis of this question based on data that has been collected in a larger joint research project together with Guido Friebel, Michael Kosfeld, Wiebke Homann, and Gerd Thielmann (DHPol).

A recent study by Homann (2012) shows, that people who decide to work in the police are regarded as more trustworthy and that trusting them is justified. But we do not know, whether trustworthiness also represents their willingness to provide effort for the enforcement of norms. Therefore, our aim is to analyze experimentally whether or not people who apply to work for the police, an institution that is the carrier of executive power and that enforces formal norms, are, per se, more willing to enforce social norms.

The police institution provides public goods and services such as freedom and public safety and works at the sensitive interface between state and society. Policemen have to enforce

[2]Following Blake and Davis (1964, p.457), norms can often be seen to be in place "if any departure of real behavior from the norm is followed by some punishment". We therefore understand norms as behaviorial rules that are backed by sanctions.

[3]Since the police bears the executive power, their obligation is to enforce the law and rules of the society by handing over suspects to jurisdiction.

[4]See Rabin (1993), Charness and Rabin (2002) as well as Fehr and Schmidt (1999), among others, for extensive discussion on social preferences and their influence on own behavior.

[5]See, in particular, Prendergast (2007, p.180) as well as Besley and Ghatak (2005) on the intrinsic motivation of bureaucrats.

directives, rights and the law as established by the government and its hierarchy towards the citizens and to ensure the safety and security of the general public – if necessary using force. The functioning of constitutional democracy is based on the trust of citizens that the government will provide these services (Scheer, 2009). To understand the importance of this task, one has to realize that, according to the German police criminal statistics (PKS, 2010, p.4), 5.9 million crimes were committed in the year 2010 alone, yielding a crime rate of 7.8 percent. A crime in the established sense is nothing else than a deviation from a formal norm, i.e. a law, which has been recorded by the police. In order to do a good job in law enforcement, the police need, basically, two things: public support, which depends on people trusting their role[6] and designated employees, who are willing to dedicate personal resources in the enforcement of norms to a greater extent than the average person. They are assumed to "go the extra mile" by providing effort in helping. To maintain the support of the public, police institutions in many countries use slogans to signal helpfulness. For instance, the German police's strapline is 'Die Polizei – Dein Freund und Helfer' (The 'Police – Your friend and helper'); other (US) slogans are 'To protect and to serve' or 'Courtesy. Professionalism. Respect.'. Their mission is best described by their willingness "to enforce the laws, preserve the peace, reduce fear, and provide for a safe environment[7]". Surveys show that people indeed have a high degree of trust in the police compared to other professions. For instance, Germany's largest market research institute, GfK-Group, found out in 2010[8] that policemen enjoy the highest level of confidence after firemen and medical professionals. About 86 percent of Germans state that police officers are very trustworthy, this being very similar to the international average of 75 percent among more than 15 countries. Although, the work of policemen is perceived to be of key importance for society, this does not explain, how an effective and efficient norm enforcement is provided by the institution of police. For instance, the increase of the crime detection rate from 2009 to 2010 of 0,4 Percent (PKS, 2010, p.4) could be driven either by changes in the prosecution system, or by higher crime prevention rates or even by luck. On the other hand it could also be due to motivated and therefore effective policemen. In this paper we focus on this latter assumption and analyze whether the job is done by employees that provide effort, even if they suffer an economic disadvantage from the enforcement of a norm, and whether those who self-select into the police are off a particular type.

One explanation for this assumption could be, that policemen, like other bureaucrats, essentially have higher opportunity costs, losing their job when they do not conform with their

[6]See, for instance, the website of German police in Hessia for the formal explanation of their duty towards the citizens: "Für die Bürgerinnen und Bürger hat die Schutzpolizei den sichtbarsten Auftritt. [...] Sie ist ein vertrauensvoller Ansprechpartner."; available at: http://www.polizei.hessen.de/icc/internetzentral/nav/305/30570ee1-825a-f6f8-6373-a91bbcb63046.htm, 26.06.2012.

[7]Mission statement of the New York Police Department; available at: http://www.nyc.gov/html/ocdv/html/services/police_initiatives.shtml, 26.06.2012.

[8]Results of the study are available at: http://www.gfk.com/group/press_information/press_releases/006009/index.de.html, 26.06.2012.

obligation; Another explanation for the provision of effort in norm enforcement could be driven by the theory of self-selection, as stated in an emerging strand of economic literature, e.g. Prendergast (2007). In particular, it is postulated that people who share special preferences and traits select themselves into the police. In this case the decision of people to work in the police works as a signal of commitment to the mission and the character of the police. A recent internal police study from Groß and Schmidt (2009) provides insights into applicants for the police profession. It reveals that most of the applicants questioned, around 70 percent, confirm that police duty is their dream job. Only 9 percent would rather have chosen a job in the private sector. The monetary motive seems to play a minor part in the decision to apply, whilst motives such as occupational safety, an interesting job, as well as the provision of public security and order, are the dominant motives. The occupational choice, therefore, is driven by own preferences, as well as the alignment of the mission, making the police job more a vocation than a profession.

The main focus of this study, therefore, is to investigate whether people who decide to work in the police differ from the general population of possible police applicants in their willingness to enforce norms. Therefore, we test experimentally to what extent police applicants are more willing to sacrifice their own payoff in order to influence the payoffs of other participants in a trust game situation. If the police applicants, indeed, show a differing behavior in the experiment, we can assume that there is a self-selection effect of particular individuals into the police organization.

Thus our research questions are the following: first, are police applicants indeed more willing to sacrifice their own payoff to punish and/or reward than other people? Second, what motives drive this enforcement behavior? And third, if we observe differences among the groups, are these related to or even explained by personal characteristics or by other factors? If they are not, we can assume that there is a self-selection effect and thus people who are motivated to work in the police differ from others with respect to their degree of enforcement of norm provisions.

To provide appropriate answers to our research questions, one has to accept that it is impossible to understand norm enforcement behavior without an adequate understanding of norms and especially the concept of social norms[9]. According to Ullmann-Margalit (1977, p.12) an appropriate working definition can be that "[...] a social norm is a prescribed guide for conduct or action which is generally complied with by the members of a society"[10]. This raises the question: why do we behave in accordance to norm X and not for instance norm Y. Roughly, one can say that this is what we were taught to do by our parents, teachers, the state, the law etc. through (negative) sanctions or (positive) rewards (Suppes and Atkinson, 1960,

[9]Following Gibbs (1986, p.208) no other concept in social sciences is more frequently invoked than the concept of norms.

[10]Looking at the norms of obligation (Hart, 1961, p.84), those can only be maintained and achieved by including (social-)pressure, even in the case that the conduct is "conflicting with what the person who owes the duty may wish to do".

p.256). On the aggregate level of a state, we also find the prevalence of social norms. Following the sense of Montesquieu (1750)[11] it is the specific condition of geography and history which produces the way of living, thinking and feeling of people, which in return determines causally its laws, customs and manners (Ullmann-Margalit, 1977, p.7). No human society exists without norms, in the sense of normative standards, that are enforced by formal and informal sanctions (Fehr and Fischbacher, 2004, p.63). The acceptance of these norms is the essence of people coexisting in society[12]. To sustain the acceptance and obligation of a norm in modern societies, these are often backed up with complex sanctioning systems. Bendor and Swistak (2001, p.1494) state that the enforcement of social norms need not to be restricted to those who were hurt by the original transgression; it can be extended to third parties, people unaffected by the transgression, but who are in the position to punish the deviant. This is required if the deviation affects the interest of the whole community and not only the interests of the involved parties. Violations of a general code, such as norms, matter to everyone and cannot be considered as merely private matters. By incorporating evolutionary game theory they prove that social norms can not only be derived as rational forms of behavior but, more importantly, they turn out to be necessary to stabilize behavior in groups and institutions (Bendor and Swistak, 2001, p.1494).

Our study also sheds new light on the controversial discussion about the impact of the process of formation through learning and working ("professional specialization") and the theory of peoples' self-selection into specific jobs. The former is found most commonly in the field of psychology (Kohn and Schooler, 1983; Lempert, 2009), while the latter is of great interest in economics. In particular, our study complements a strand of research emphasizing the role of allocation and self-selection of applicants in labor markets. For instance, the work of Kosfeld and von Siemens (2011, p.26) summarizes other articles that analyze the possible sorting of workers differing by skill (Kremer et al., 1996; Saint-Paul, 2001), liability (Dam and Pérez Castrillo, 2006), vision (Van den Steen, 2005) or mission (Auriol and Brilon, 2010) in the private sector. But the hiring of the right employees in the public sector might have an even greater impact than in the private sector. Prendergast (2007), for instance, shows that bureaucrats – such as teachers, policemen, firemen or social workers – should have biased preferences, but should be biased either towards (altruistic) or against (hostile) their clients in order to get higher utility. This bias depends on their work task and on its alignment with social interests which could increase social welfare. Since salaries in the public sector are inflexible and

[11]Charles de Secondant, Baron de Montesquieu (1689-1755) was one of the famous state theorists of the European Absolutism. In his main work "La dé <<L'Esprit des lois>>" (In the defense of "The Spirit of the Laws")(Montesquieu, 1750) he described the separation of powers in a state. States should be no longer governed by absolute powers, such as monarchy. Rather they should be separated into the legislative, who provides the procedure to introduce laws, the administrative, which provides security and executive power to ensure the compliance, and the judicative, which sanctions deviations from formal jurisdiction.

[12]In fact, each citizen virtually signed a social contract and accepted the given norms of a society. Theories about this range back into European Absolutism and its main representatives Thomas Hobbes (1588-1679), John Locke (1632-1704) and Jean-Jacques Rousseau (1712-1778).

typically do not depend on performance, he assumes that only people with sufficiently strong biased preferences self-select into bureaucracies. Assigning the correct treatment, due to being altruistic or hostile towards the clients, grants them a higher intrinsic benefit. Thus, it is assumed that only people with extremely one-directional biased preferences self-select into bureaucracies, because of their additional non-pecuniary value. In this respect our study is also related to Delfgaauw and Dur (2007), Delfgaauw and Dur (2008) and Francois and Vlassopoulos (2008), who examine workers's incentives and selection when they differ in terms of their intrinsic motivation. Furthermore, Besley and Ghatak (2005) give insights to what extent the productivity of Non Private Organizations (NPO's) and public sector bureaucracies increases if agents that share the same mission or goals are employed. These mission-oriented agents perceive additional benefits from producing a collective good. Compared to the private sector, the setting of appropriate payment can be reduced. However, mission-oriented agents, who are motivated by non-pecuniary aspects, are expected to self-select into NPO's and public sector bureaucracies, depending on the correlation of their missions. For instance, Kosfeld and von Siemens (2009) show in their model that there can exist a separating equilibrium of workers' self-selection into different firms, depending on their preferences. In particular, they present that self-selection depends on whether workers are selfish types or conditional cooperators, who derive value from working with other cooperators in a team.

When setting out these theories, one has to realize that there is a lack of experimental field evidence on people's self-selection into professions. The special contribution of this paper is that we conduct our experiment with subjects who are actual public sector applicants, more specifically police applicants[13]. This is definitely an advantage for generalizing experimental results to real-world applications. The importance of conducting laboratory experiments is extensively discussed in Falk and Heckman (2009). Experiments permit results in a controlled decision environment. Thus, we can isolate effects and make precise predictions. A debate about the advantages of field experiments, measuring behavior in a special context, is presented by Levitt and List (2009), in which the usefulness of internet field experiments in testing predictions is also mentioned. In our study we designed a web-based experiment where more than 3,500 participants logged in.

We conducted a standard trust game for a two-person interaction. Students of the Goethe University Frankfurt played this game as a trustor or a trustee. Additionally, students were given the information, that the trust game will be followed by a third party punishment/reward game, in which a third party, a norm enforcer, can decide upon the allocation of punishment and/or reward points. This other participant would either be a police applicant or a high school student in their last year. We take the latter as a control group, since they are also going to apply for jobs at some time, have the same minimum educational background and are comparable to

[13]We were able to conduct our study with police applicants thanks to cooperations with the German police academy at Hessia, who made contact with applicants with a starting date in 2011, and in RLP, who made contact with applicants with a starting date in 2012.

the police applicants in terms of age and regional provenance. Therefore, our norm enforcement experiment is designed in a way that there are two types of framework in which the previous trust game could be played. One with a police applicant and one with a high school student in the role of the norm enforcer. Matching decisions in the trust game are provided by students, who are separated into four groups. Two groups of students anonymously played either as a trustor or a trustee with high school students as a norm enforcer. Those students received no information about the norm enforcer. Relative to the baseline the other two groups played with each other, either as a trustor or a trustee, but were given the additional information that they will be matched with police applicants of a German police academy. Additionally we elicited the beliefs of the students on the expected behavior of the norm enforcers. Using this setup, we test if police applicants are indeed more willing to spend points to punish and/or reward in the experiment than high school students in the control group. More specifically, we made use of the strategy method and asked the norm enforcer how many points they want to allocate to the trustor and the trustee, separated for all possible strategies that could occur.

Basically our paper, therefore, examines the crucial question: why should one person C intervene in the interaction of two other persons, A and B? From the economic point of view, there is no rational explanation why an uninvolved person, in the sense of a *homo economicus*, should provide any effort to enforce a social norm. One straightforward explanation might be that: individuals support a norm whenever it favors them (Bendor and Swistak, 2001, p.1497). To be like this, people seem to incorporate social preferences that compensate disutility from their actions[14]. There is also strong empirical evidence from third party punishment games in the laboratory that people with selfish preferences should never punish, whereas the notion of strong reciprocity implies that third parties should be willing to punish the violation of certain norms (Fehr and Fischbacher, 2004, p.65). Kosfeld and Rustagi (2012), for instance, point out that the willingness to enforce social norms through punishment has a significant impact on leadership efficiency. Further experimental evidence shows that many individuals have social (other regarding) preferences[15], which are not motivated by selfish interests alone but also by other concerns, such as inequality aversion, fairness considerations and welfare maximization (e.g. Fischbacher et al., 2001; Charness and Rabin, 2002).

Our results show, even though we use a minimal premise (being a police applicant or not), that police applicants are willing to sacrifice their own payoff more than the control group, in order to influence the outcomes of others. This willingness depends on the observed outcomes of the trustor and trustee in the trust game. Efficient and reciprocal behavior is rewarded in our experiment, whereas deviant behavior is punished. These results are confirmed as robust, even when we control for personal characteristics. The data tend to confirm a self-selection effect of special people, who want to work in the police. As a consequence, we confirm that the police

[14]An extensive discussion of social preferences such as equality and fairness and the changes in utility see Fehr and Schmidt (1999) as well as Bolton and Ockenfels (2000), among others.

[15]For main representative contributions see Fischbacher et al. (2001), Falk et al. (2005) and Fehr and Falk (2008).

profession attracts the *right* kind of applicants with respect to norm enforcement. In line with the theory of self-selection in the public sector (e.g. Besley and Ghatak, 2005; Prendergast, 2007) our results suggest that, in fact, police applicants are more willing to disclaim a monetary benefit in order to behave according to their own preferences. Especially regarding Prendergast (2007) we were not able to confirm that people are only biased in one direction, either behaving hostilely or altruistically. It seems that police applicants, in comparison to the control group, seem to be biased in both directions: higher punishments through higher hostility and higher rewards due to higher altruism. An argument might be that people have mixed-motives and that police applicants show greater reactions on the total spectrum between hostility and altruism.

The reminder of the paper is organized as follows: Section 2.2 describes the experimental design which provides a framework for the analysis of social interactions with third party punishment; Section 2.4 presents the results of the Motivated Applicants in third party interaction; Section 2.5 provides several robustness checks on the significance of revealed differences between the subject groups; the final section concludes and points out the contribution of this paper.

## 2.2 Experiment

In order to answer questions on the willingness to enforce social norms, especially who is expected to do so and for what reasons this is done, we designed an online experiment. We gathered data using the online experiment web portal of the FLEX[16] laboratory at Goethe University Frankfurt. Data obtained were also used for other studies (e.g. Homann, 2012). In total 3,552 subjects participated; in this part we focus on 2,390 subjects[17]. The design of our online study placed subjects in the context a trust game followed by punishment and/or reward decisions by a or as a third party. After the experimental part, subjects had to answer control questions about individual attitudes[18] as well as demographic characteristics[19].

### 2.2.1 Recruiting and payment

In total our study consisted of three subject groups: police applicants, high school students and university students. The first were police applicants of the police academy of the German

[16]Frankfurt Laboratory for Experimental Economics. For further information visit http://www.flex.uni-frankfurt.de

[17]In total we conducted two waves, the first started in October 2010 and ran about four months, in which we surveyed police applicants from Hessia, high school students and students from the Goethe University Frankfurt. The second wave opened in July 2011 and ran about 5 month surveying police applicants in Rhineland-Palatinate (RLP). The difference in subjects is caused by design of student groups and an abandonment rate of roughly 10 percent. Furthermore, some groups were only used to provide decisions for the determination of the payoffs of the main subject groups.

[18]Questions regarded attitudes to trust, risk, job motivation, law enforcement, sentencing, punitiveness and life activity.

[19]The entire questionnaire can be found in Appendix A. All experimental instructions and control questions are in German.

federal states Hessia and Rhineland-Palatinate (RLP). Due to the cooperation with the German police university (DHPol) and the police academies of the states, people were invited to our study when they handed in their applications and received a letter of acknowledgement[20]. Using this procedure, we make sure that we, indeed, have real-life police applicants in our subject pool. In fact, we only invited those people who are motivated to work as a policemen, although we do not get to know whether they passed the assessments successfully subsequently. Police applicants were informed that we were interested in the behavior of applicants for different professions. In the invitation letter we included an individual access code for our experimental system, which could only be used once. After completing the study, subjects could participate in a lottery to receive their actual payoff or one of three iPod Nanos by giving their name, e-mail address and access code. The combination of access code and the possibility to opt-in for the lottery afterwards provided the greatest possible anonymity and randomization among the participants. Altogether, N=630 police applicants participated in our study. Participation rate among all invited persons was 11.86 percent.

Because police officers need a minimum qualification in education to apply, we use high school students, who are attending their last year of school, as our control group. Since they are also going to apply for jobs and/or further qualifications, we consider them to be in the same situation as the police applicants[21]. The subjects of this group received an introduction from their liaison teacher and an invitation card. The card contained a link to the online system as well as an individual access code[22]. In order to have a representative sample of high school students, the group is drawn from the pool of schools supervised by the public school authority in Hessia representing 224 schools at all. To provide a geographical stratification, we sorted schools by zip code, contacted every third school, in total 75 schools, and asked them, more specifically the liaison teacher, to give out our invitation cards. In the end, a total of N=976 students from 42 different schools participated in our experiment. The total participation rate was 18.86 percent[23].

The third group we needed, in order to provide decisions for the main treatment groups, consisted of students from several faculties of Goethe University Frankfurt and was recruited via OrSee (Greiner, 2004) of the FLEX Laboratory. Students got an individual access code via the invitation e-mail and could log in on our experimental system. In total N=1,673 students participated, while we only focus on N=784 participants in this study. Subjects played only in the trust game and were additionally asked to state their beliefs about trust, trustworthiness and norm enforcement on their corresponding partners from the other groups.

[20]Letter of invitation can be found in Appendix 2.B

[21]Interestingly we were able to identify in total three subjects who first participated as police applicants and also as high school students afterwards. Considering only their first participation into our analysis we were able to prevent a mix of the subject groups.

[22]Invitation card as well as announcement letter can be found in Appendix 2.B

[23]Compared to the participation of the police applicants the rate is higher. This might be due to the invitation process, resulting the encouragement of high school students by their liaison teacher into a higher participation rate.

Out of all groups of the study, we chose participants, who opted-in for the lottery, and got paid their payoffs achieved in the experiment. All winners were informed by e-mail. Altogether, 39 subjects were paid their earnings, on average about EUR 143. Additionally, six participants from the police applicants and the control group were selected to win an iPod MP3 Player as an additive non-monetary gain.

**Group Characteristics** Ending the study in December 2011, we were able to use incomplete (complete) experimental data of more than 630 (614) police applicants, 334 (321) from the federal state Hessia and 296 (293) of RLP[24]. Off these, 38 percent were female and the group was, on average, at the age of 21.07 years[25]. Due to the minimum requirements for applying for police duty, we also asked for their current educational level and found it to be at least German middle school[26]. In contrast, we were able to question 976 participants of Hessian high school students. These were, on average, 19.63 years old and shared the educational level of the German Abitur. Table 2.1a reports the demographic, social and economic background of the two subject groups.

About 66 percent of the control group with an educational level of the German Abitur were females, compared to 38 percent in the group of police applicants (Mann-Whitney U-Test: p-value=0.000, two-tailed). At a first glance, we observe significant differences between the study groups in terms of their age, height, education, academic background, income and grown up in citytype (all: Mann-Whitney U-Test: p-value=<0.002, two-tailed). Only the percentage of participants with a migrational background, 6.9 percent of the control group and 8.9 percent of the police applicants, is not significantly different (Mann-Whitney U-Test: p-value=0.170, two-tailed). We assume the significant differences between the group of police applicants and the high school students is driven by the differences in the gender proportion. In Table 2.A.1a, in the Appendix 2.A, we therefore report the background of the participants by gender. We find, that the differences between the study groups get smaller in absolute terms. While the differences in terms of age, height and grown up in citytype become insignificant for the females, we still observe significant differences in all dimensions among the male participants.

Although we see the differences between the treatment groups diminish within their gender, we wanted to assure a high level of comparability between the police applicants and the control group. Therefore, we also looked at a reduced data set where we only kept the observations

[24]Data in Table 2.A.2 describes the differences between police applicants in the states Hessia and RLP we surveyed. We observe more women to participate in our study from the group of RLP police applicants and the participants to be younger on average. When analyzing the differences between the police applicants separately for men and women we do not find other differences to be consistent. Although all differences between the groups decline we still observe Hessian applicants to be one average about one year older than the applicants of RLP.

[25]This corresponds to the study of Groß and Schmidt (2009) in which they surveyed a complete year of policemen in training with around 27.2 percent females and an age band of <20 to 23 of about 73.1 percent. Our study therefore is in line with other police research projects.

[26]Since requirements for a successful application in the German police demand an educational level of the German Abitur, all participants have to reach this educational level within the next years.

Table 2.1a: Demographic, Social and Economic Background of Police Applicants and Control Group

| Variable | Complete | | | | |
|---|---|---|---|---|---|
| | **Control Group** | | **Police Applicants** | | **Mann-Whitney Test** |
| | Obs. | Mean | Obs. | Mean | |
| **Personal characteristics:** | | | | | |
| Gender (1 = Female) | 959 | 0.66 | 617 | 0.38 | 0.000*** |
| | | (.473) | | (.486) | |
| Age (years) | 959 | 19.63 | 617 | 21.07 | 0.000*** |
| | | (2.466) | | (3.178) | |
| Height (in cm) | 959 | 172.41 | 617 | 175.91 | 0.000*** |
| | | (11.575) | | (10.46) | |
| Education (5 = Abitur) | 959 | 5.00 | 614 | 4.74 | 0.000*** |
| | | (.) | | (.462) | |
| Academic Backround (1 =yes) | 959 | 0.61 | 617 | 0.41 | 0.000*** |
| | | (.489) | | (.492) | |
| Income (in €) | 958 | 170.68 | 616 | 446.71 | 0.000*** |
| | | (285.585) | | (518.781) | |
| Grown up in citytype | 959 | 3.03 | 617 | 2.84 | 0.002*** |
| | | (.933) | | (1.079) | |
| Migrational backround (1 = yes) | 957 | 0.069 | 615 | 0.088 | 0.170 |
| | | (.254) | | (.283) | |

Note: Table reports no. of observations as well as variable means; standard errors in parenthesis; lowest educational type observed is 3 "Realschulabschluss" followed by 4 "Fachabitur" and 5 "Abitur"; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "big cities", 2 "middle sized cities", 3 "small towns" and 4 "rural areas"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

within an age range of 16-22 years and those with the current educational level Abitur[27]. Table 2.1b reports on the demographic, social and economical background of the reduced data set[28].

Again we observe significant differences between the subject groups in the dimensions of gender, height, academic background and income (all: Mann-Whitney U-Test: p-value=<0.000, two-tailed). Our reduced data set confirms previous findings in which more men apply to the police. Furthermore it seems, that police applicants come from households with lower educational background and tend to have a higher current income than high school students in general. They also grew up in smaller cities, something between a middle sized city and a small town. We took these differences into account during our analysis and provide a robustness check on our results using the reduced data set in Section 2.5.2.

[27]Possessing the educational level Abitur at the date of employment is mandatory for the police applicants. Additionally, we assume that older police applicants are in other life circumstances than those within the same age range as the high school students.

[28]Note that due to the limitation of the dataset we loose more police applicants than high school students, around 36.8 percent. Table 2.A.1b, in the Appendix 2.A, reports the background of the reduced participants pool by gender.

Table 2.1b: Demographic, Social and Economic Background of Police Applicants and Control Group (16-22 years and Abitur)

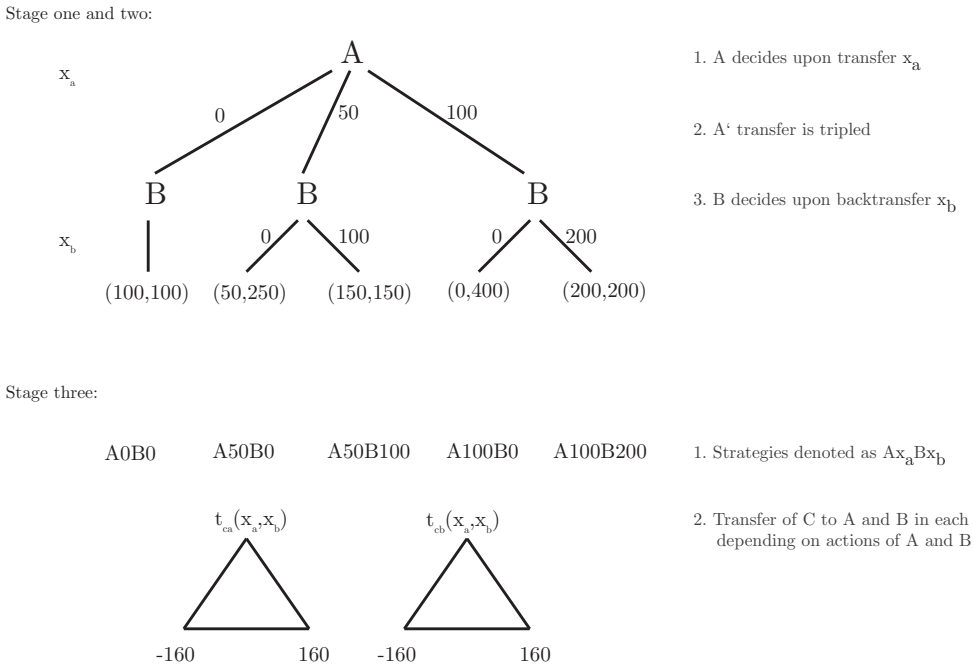
| Variable | Complete | | | | |
|---|---|---|---|---|---|
| | **Control Group** | | **Police Applicants** | | **Mann-Whitney Test** |
| | Obs. | Mean | Obs. | Mean | |
| **Personal characteristics:** | | | | | |
| Gender (1 = Female) | 953 | 0.66 | 388 | 0.42 | 0.000*** |
| | | (.473) | | (.494) | |
| Age (years) | 953 | 19.52 | 388 | 19.58 | 0.523 |
| | | (.707) | | (1.214) | |
| Height (in cm) | 953 | 172.40 | 388 | 175.66 | 0.000*** |
| | | (11.585) | | (11.414) | |
| Academic Backround (1 =yes) | 953 | 0.61 | 388 | 0.41 | 0.000*** |
| | | (.488) | | (.493) | |
| Income (in €) | 952 | 167.39 | 388 | 294.01 | 0.000*** |
| | | (281.969) | | (327.92) | |
| Grown up in citytype | 953 | 3.04 | 388 | 2.85 | 0.012** |
| | | (.93) | | (1.083) | |
| Migrational backround (1 = yes) | 951 | 0.066 | 387 | 0.049 | 0.236 |
| | | (.249) | | (.216) | |

Note: Table reports no. of observations as well as variable means truncated for all participants between 16 and 22 years and with a current or soon completed educational level Abitur; standard errors in parenthesis; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "rural areas", 2 "small towns", 3 "middle sized cities" and 4 "big cities"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

### 2.2.2 Trust and third party punishment or reward game

The experimental data used in this paper is obtained from a three stage online experiment at the beginning of the study: In the first two stages an investment game in the sense of Berg et al. (1995) is used to measure subject's propensity to trust and react trustworthily conditional on the observed trust level. In the third stage a third party punishment or reward (TPP/R ) game is used to measure a subject's propensity to punish or reward other people who played in the aforementioned trust game. According to the survey structure of the online experiment, we asked people about their behavior in a trust game situation in the role of a trustor and a trustee in the first two stages. We then extended the setting in stage three, where they stated their transfer decisions conditional on the observed payoffs of other players in stage one and two. The experimental instructions can be found in Appendix A. Police applicants and high school students played all stages with different students of the Goethe University Frankfurt as their counterparts. In this study we focus on their decisions in the third stage. Figure 2.1 illustrates the game tree in stage one and two as well as the decision space in stage three. It is then followed by a detailed description of the stages.

Figure 2.1: Third Party Punishment/Reward Game




**Stage one and two:** This stages involved two parties in a one-shot interaction. First, in stage one, subjects in the sender role, denoted as Player A, were the trustors. Second, in stage two, subjects in the receiver role, denoted as Player B, were the trustees. Both the trustors and the trustees received an endowment of EUR 100. At the beginning, in stage one, the trustors can send nothing, EUR 50 or EUR 100 to the receiver. This transferred amount is tripled by the experimenter. Afterwards, in stage two, each trustee decided how much he wanted to keep for himself and how much he wanted to transfer back to the sender. We used the strategy method[29] to elicit the second mover's decision. In particular, for both possible transfer levels of Player A, we asked the trustees how much they wanted to back transfer. When a trustor sent EUR 50, the receiver could back transfer nothing or EUR 100, or when the trustor sent EUR 100, the receiver could transfer nothing or EUR 200 back. The latter decision leads to an equal payoff of EUR 200 for both parties. Payoffs $\pi_i$ for subjects in this stage were precisely,

$$\text{for Player A: } \pi_a = E_a - x_a + x_b \tag{2.1}$$

$$\text{for Player B: } \pi_b = E_b + 3x_a - x_b \tag{2.2}$$

where $E_i$ denotes the endowments and $x_i$ the transfers of the Players A and B, with $i \in \{a, b\}$. A high level of trust in the first stage and a high level of reciprocity in the second stage yield the highest welfare in this setting. In order to provide matching decisions for our

[29]The strategy method was first described by Selten (1967) and allows to collect additional data without significantly disturbing the results that were collected when only one situation is asked. For an extensive discussion on the usage of the strategy method in experiments see e.g. Brandts and Charness (2000) among others.

analysis and payoffs, we invited university students to participate either in the role of Player A or Player B. Additionally, students were made aware of whether they are going to play with a police applicant or another participant of the study, in our setting a high school student.

**Stage three:** To create a norm enforcement situation we designed a third party one-shot interaction based on stages one and two. Subjects in stage three now face a situation in which they are given the information that two other participants of the study had played the trust game previously. According to their interactions five distinct strategy profiles, of the trustor as Player A and the trustee as Payer B, can be derived, henceforth denoted as: A0B0, A50B100, A100B200, A50B0 and A100B0. For each of the given strategy profiles, the subjects were now endowed with 160 points and given the opportunity to assign points for deduction or reward. Assigning one negative point costs Player C 1 EUR and sanctions the player, the transfer is sent to, by 2 EUR. On the other hand assigning one positive point also costs 1 EUR and increases the payoff of the respective player by 2 EUR. Therefore the marginal cost to the norm enforcer were strictly smaller than the marginal costs imposed on the person who received the transfer. Player C could transfer any amount to the other players by assigning punishment and/or reward points or keep the total endowment[30]. Transfers are denoted as $t_{ca}(x_a, x_b), t_{cb}(x_a, x_a) \in [-160, 160]$ with the restriction of $|t_{ca}(x_a, x_b)| + |t_{cb}(x_a, x_b)| \leq 160$. The payoffs for the players now change to

$$\text{for Player C: } \pi_c = E_c - |t_{ca}| - |t_{cb}| \tag{2.3}$$

$$\text{for Player A: } \pi_a = E_a - x_a + x_b + 2t_{ca} \tag{2.4}$$

$$\text{for Player B: } \pi_b = E_b + 3x_a - x_b + 2t_{cb} \tag{2.5}$$

where $\pi_i$ denotes player payoffs, $E_i$ the endowments, the transfer $x_i$ and $t_{ci}$ the transfers from Player C to Player $i$, with $i \in \{a, b\}$. Without any intervention of Player C these strategies lead to the same payoffs as described in stage one and two. Additionally, Player C is made aware that a reduction of others payoffs below zero is not possible, although he could spent all his endowment to do so. All players had complete knowledge on the rules of the game, players endowments and C's punishment and/or reward options. The payoffs of all players were determined by the matching of their decisions and randomly drawn participants were paid after the study.

### 2.2.3 Procedure

In order to give answers to the questions stated in the introduction, we chose the following procedure to shed light on the differences of people who are in search of a new job. First, we elicited the behavior of all study groups in the trust game. Next, we asked the police applicants

[30]With an exchange rate of one point = one EUR.

and the high school students to play the third stage of the TPP/R game and decide how many points they are willing to allocate for punishment and/or reward.

Therefore, in stage three of our experiment we investigated the propensity to enforce norms in a third party setting between the police applicants and the control group. To provide the matching partners, providing decisions as Player A and B, we surveyed university students separately. In the first step we randomly assigned a pool of students (N=784) to four groups to play the trust game, either in stage one or two. Students were informed that they were going to play with a stranger in the role of a norm enforcer. Two groups played in the role of the trustor receiving either no information (N=196) or the additional information that the norm enforcer is a police applicant (N=201). The other two groups played in the role of the trustee with either no information about C (N=195) or were made aware that the norm enforcer is a police applicant (N=192). The amount transferred as a trustor indicated their trust level, whereas the choice of back transfer measured the trustworthiness of the students. After their decisions, students were asked to state their beliefs as to the norm enforcers's behavior for each strategy that the trustor and the trustee could have played. The amount of the expected transfer from Player C measured peoples' general expectations of norm enforcement behavior, either in the framework with a police applicant or with somebody else, i.e. a high school student.

In the second step only the participants of the control group and the police applicants were asked to play the TPP/R game in the role of the norm enforcer. Using the strategy method, they had to denote for each possible strategy of the trustor and the trustee how many punishment or reward points they want to assign to each of them. In the end we gathered ten transfer decisions from both study groups, separated by the strategies the trustor and the trustee could choose in the trust game. If Player C, for instance, chose not to allocate any points, his strategy would lead to the same payoffs as without a norm enforcer, as described in stage one and two of the TPP/R game.

## 2.3 Predictions

Using our framework we investigated whether police applicants were indeed more willing to enforce norms than the control group of high school students and therefore to sacrifice their own payoffs in order to do so. In line with theories that show that people's self-selection into jobs in the public sector is dictated by their goals (e.g. Prendergast, 2007; Dixit, 2002; Besley and Ghatak, 2005), we assume that people who are motivated to work in the police are inherently more willing to enforce norms even if it is costly. The decision to work as a police officer is, among other reasons, a result of their pro-social attitudes. For instance, if people are driven to work in the police owing to their altruistic aims and traits, they should indeed show higher transfer levels in the experiment. Therefore, we were interested as to what motives are responsible for the differences that we might observe. To provide a reference for the

behavior of the norm enforcer, we analyze the situation with regard to the motives the trustor and trustee reveal. Additionally, we make use of the beliefs of the university students, who actually played the role of the trustor and the trustee. We take the commonly shared desired behavior of the norm enforcer as a basis for the prediction as to the expected transfers. Table 2.2 provides an overview of the strategies and payoffs of the players A and B as well as the resulting efficiency, equality and revealed reciprocity for each strategy. Additionally, it reports the expected behavior of the norm enforcer according to the students who actually played in the role of the trustor and the trustee[31].

Table 2.2: Predictions about the Behavior of the Norm Enforcer

| **Transfer decision** | | **Payoffs** | | **Effiiciency** | **Equality** | **Reciprocity** | **Expected actions of Norm Enforcer by students** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Player A | Player B | Player A | Player B | | | | to Player A | | | to Player B | | |
| | | | | | | | % rew | % zero | %pun | % rew | % zero | %pun |
| 0 | 0 | 100 | 100 | low | yes | - | 5% | 46% | 49% | 26% | 73% | 1% |
| 50 | 100 | 150 | 150 | medium | yes | yes | 40% | 58% | 2% | 47% | 51% | 2% |
| 100 | 200 | 200 | 200 | high | yes | yes | 36% | 61% | 2% | 41% | 57% | 2% |
| 50 | 0 | 50 | 250 | medium | no | no | 65% | 34% | 1% | 6% | 29% | 65% |
| 100 | 0 | 0 | 400 | high | no | no | 68% | 31% | 0% | 7% | 30% | 63% |

Note: Transfer Decisions correspond to the strategies, Player A (the trustor) and Player B (the trustee) could chose in the trust game; whithout any intervertion of the norm enforcer Payoffs describes the actual payoff of the players; effiiciency increases as the amount invested by the trustor increases; Equality indicates whether the behavior of the trustee lead to an equal split of the total payoff; Reciprocity therefore describes whether the backtransfer of Player B could be seen as reciprocal; additionaly the expected actions of a Norm Enforcer are calculated from the beliefs of students that played in the role of a trustor or a trustee with no specific information upon who is in the role of Player C; percentages of those who expect the norm enforcer to reward (%rew), to allocate nothing (%zero) and to punish (%pun) are indicated;

While the trustor decided on the efficiency of the game, the trustee decided on the distribution of the payoffs. To maximize his payoff, a trustor should provide a high transfer and therefore give the trustee the possibility to reciprocate. If a norm enforcer acknowledges that the trustor incorporates an efficiency motive and appreciates this action of trust, we would expect to observe reward transfers to the trustor. The other way around, we would expect punishments if inefficiency is present and total welfare is low. On the other hand, a trustee in this game is confronted with a binary choice of transferring back or not. Therefore, we expect two motives that could lead the norm enforcer to choose his transfers to the trustee: equality concerns and punishment of deviant behavior. If a trustee chooses not to split the money transferred from the trustor, this is perceived as a deviation from the norm of fairness and causes an inequality among the players. A norm enforcer that solely cares about the deviation is expected to punish the deviating player irrespective of the resulting inequality, whereas an enforcer who dislikes inequality between the trustor and the trustee is expected to increase punishments as the payoff difference between the players becomes larger. This expected pattern of action can also be derived from the beliefs of the university students in Table 2.2.

[31]We take the beliefs of the university students – who got no further information upon who they are going to play with – as the benchmark.

Differences in the behavior between police applicants and the control group towards the players in the trust game might indicate a self-selection into the police profession of those that are willing to give up money to influence the payoffs of others. So far, it has been shown experimentally that people commit to the actions of others even by acting in a way that might economically harm themselves (e.g. Fehr and Fischbacher, 2004). We expect commitment to be higher in professions that deal with deviations from social norms on a day-to-day basis, such as policemen or social workers. People in these professions might receive additional utility from allocating punishments or rewards to theirs clients (Prendergast, 2007) or by sharing the mission of the organization (Besley and Ghatak, 2005), that compensates their suffered loss. Otherwise, if we cannot observe any differences in the transfer behavior, self-selection is not shown and it would seem, a priori, that people who want to work in the police behave in the same way as people who prefer to apply for other jobs.

## 2.4 Results

To investigate the evidence for a self-selection effect for the police with respect to norm enforcement we here focus on decisions in the role of a norm enforcer. If people who chose to apply for the police are willing to waive more of their own payoff to reduce or increase the payoff of others than the control group we should observe higher transfer levels overall. Table 2.3 shows the total allocation frequencies among the two groups in the situations that were previously described.

Table 2.3: Frequencies of Transfer Behavior

| Variable | **Control Group (1)** | | | | **Police Applicants (2)** | | | |
|---|---|---|---|---|---|---|---|---|
| | Obs | N of Obs | % of Obs | Avg. spent points | Obs | N of Obs | % of Obs | Avg. spent points |
| **Observed willingnes for transfer** | | | | | | | | |
| No Transfer at all | | 90 | 9.22% | 0.00 | | 49 | 7.78% | 0.00 |
| At least one punimshment | 976 | 778 | 79.71% | -101.97 | 630 | 535 | 84.92% | -107.88 |
| At least one reward | | 865 | 88.63% | 112.46 | | 574 | 91.11% | 131.60 |

Note: Table reports the frequencies of total transfer decisions for the study groups: Control Group (1) and Police Applicants (2);

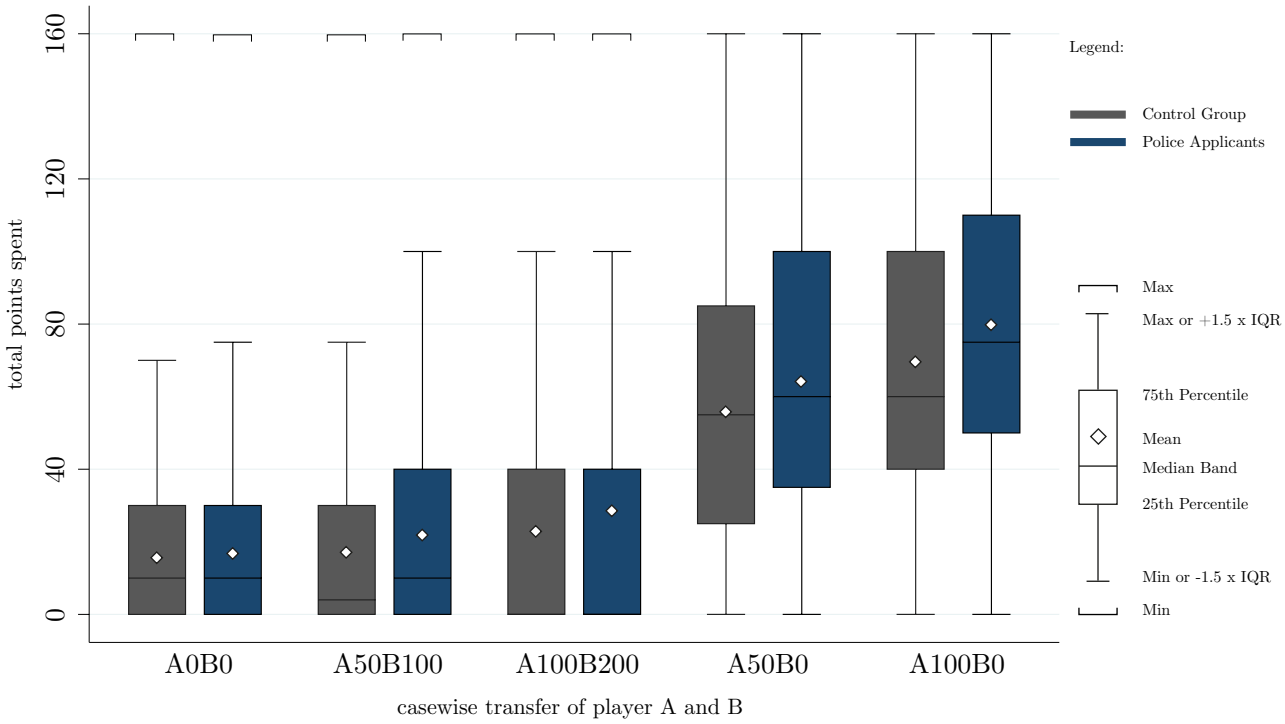
We observe from 630 police applicants (976 high school students) that only 49 (90) subjects, 7.78 (9.22) percent chose not to contribute any points at all, neither as a sanction nor as a reward in any situation. In fact, out of the aforementioned total population, 535 police applicants (778 high school students), in percent 84.92 (79.71), chose to punish at least once, with a total average amount of punishment of -107.88 (-101.97) points. On the other hand, out of the same population of participants, in total 574 police applicants (865 high school students), 91.11

(88.63) percent, chose to reward at least once, with a total average amount of rewards of 131.60 (112.46) points. We therefore focus first on the general willingness to enforce norms at cost to oneself. Afterwards, we analyze how the points were allocated to the trustor and the trustee separately, in order to give a deeper insights into the differences between the subject groups.

### 2.4.1 General willingness to enforce norms

In Figure 2.2, the average total transfers of the norm enforcers are illustrated for each possible strategy of the trustor and the trustee, separated for the police applicants and the control group[32]. Our prediction was that police applicants are motivated to work in the police and that this implies that they have lower costs for norm enforcement and therefore spend more points in the experiment than the control group of high school students without the additional public service motivation.

Figure 2.2: Boxplot - Total Points allocated in the TPP/R Game




In fact, police applicants, in the role of the norm enforcer do have a significant higher average transfer willingness than those who chose not to apply. Police applicants on average chose to allocate 42.30 of their points, which is significantly higher than the average of 36.19 points of those in the control group (Mann-Whitney U-Test: p-value=0.000, two-tailed). The first

[32]The players in the role of the norm enforcer played game in stage one and two as described in section 2.2.2. After making their decisions as trustor and trustee, playing with another person of the complete study without any additional information, were asked to state for all possible strategies that two other, not nearly specified, participants could play how much points they want to transfer to either the trustor or the trustee and how these points should affect his payoff, more precise if the points should punish or reward the person they are sent to.

three decision cases in Figure 2.2 depict the contribution of the norm enforcer, when trustor and trustee end up with equal payoffs but face an increase in efficiency (A0B0, A50B100 and A100B200). The remaining two decision cases, A50B0 and A100B0, indicate the contribution for the cases where the trustor chose medium and the highest possible efficiency, but the trustee decided not to reciprocate at all, by keeping all the transfers he got. All norm enforcer transfers in all decision cases among both groups are significantly different from zero (each one-sample t-test: highest p-value=0.001). This confirms the findings of other experimental studies that people commit to the actions of others even if they might suffer a loss.

Table 2.4: Total Points allocated in the TPP/R Game

| | **Control Group** | | **Police Applicants** | | **Δ** | **Mann-Whitney Test** |
|---|---|---|---|---|---|---|
| Variable | Obs. | Mean | Obs. | Mean | | |
| Transfer if A0B0 | | 15.49 | | 17.51 | 2.02 | 0.215 |
| Transfer if A50B100 | | 17.15 | | 22.85 | 5.70 | 0.000*** |
| Transfer if A100B200 | 976 | 22.90 | 630 | 27.62 | 4.71 | 0.068* |
| Transfer if A50B0 | | 55.83 | | 63.91 | 8.09 | 0.000*** |
| Transfer if A100B0 | | 69.59 | | 79.58 | 9.99 | 0.000*** |

Note: statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

Table 2.4[33] reveals significant differences in the total points transferred in the cases A50B100 (Mann-Whitney U-Test: p-value=0.000, two-tailed) and A100B200 (Mann-Whitney U-Test: p-value=0.068, two-tailed), where equality is achieved among trustor and trustee. In the cases where the trustee acted selfish and caused an unequal payoff, A50B0 (Mann-Whitney U-Test: p-value=0.000, two-tailed) and A100B0 (Mann-Whitney U-Test: p-value=0.000, two-tailed), we observe even stronger differences between the study groups, being significant at the 1-percent level. Only in the case where the trustor caused the highest inefficiency and the trustee was not given the possibility to reciprocate, A0B0, we were not able to identify a significant difference between the two groups (Mann-Whitney U-Test: p-value=0.215, two-tailed), although police applicants transferred on average more than the high school students. Police applicants are norm enforcers that are likely to sacrifice more points in order to punish and/or reward than the corresponding control group of high school students. This transfer willingness is dependent on the observed situation among the trustor and the trustee and supports the assumption, that motives predicted before might play a role in the behavior as norm enforcer.

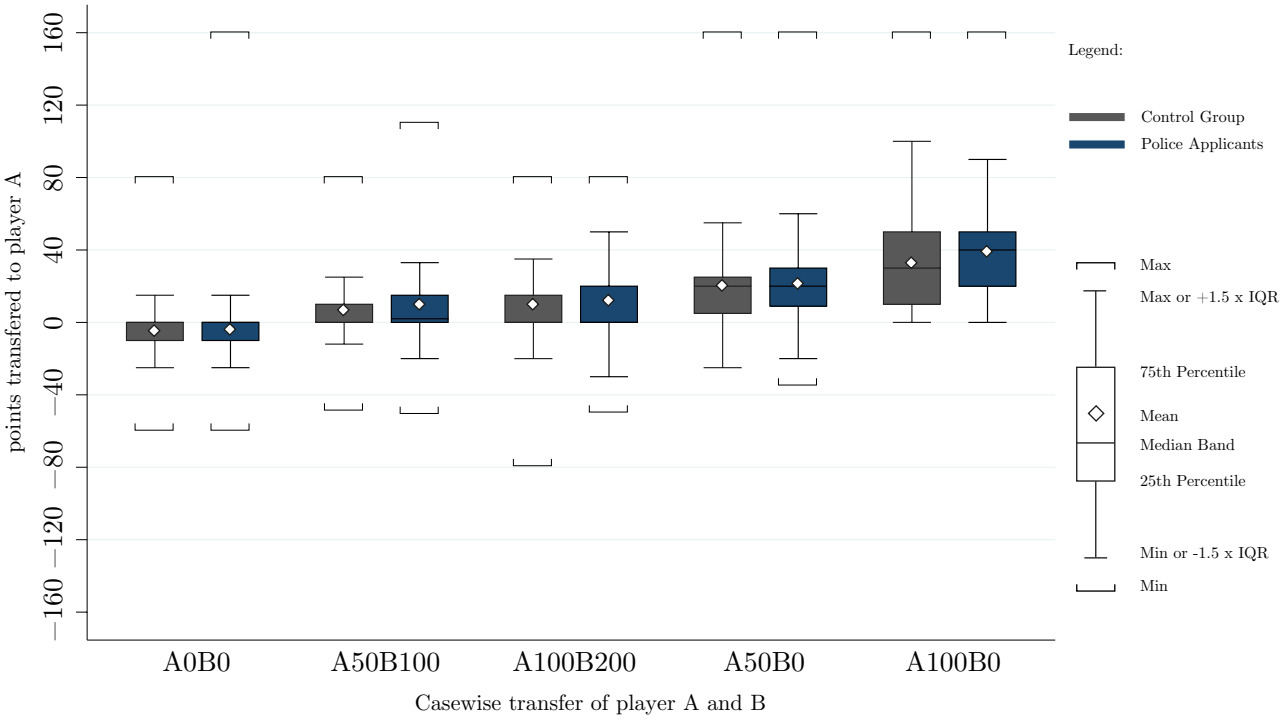
[33]Table 2.4, Table 2.5 and Table 2.6 are based on the complete Table 2.A.3a that can be found in the Appendix 2.A.

**Result 1:** *Over 90 percent of the subjects are willing to affect the payoffs of others in the role of a norm enforcer. Of those participants, the police applicants group sacrifice significantly more of their own payoff than the corresponding control group, in order to punish/reward. Transfers are almost twice as high if the trustee chose not to reciprocate.*

### 2.4.2 Player A - Efficiency

The analysis of total points transferred implies that participants of both groups, police applicants and high school students, commit to the actions of the players in the trust game and reveal differences among the groups. To investigate the motives that drive people's enforcement decisions, we will first focus on the points allocated to the trustor. Since all norm enforcers also previously played the game in the role of the trustor, they were aware of the action space this player. By choosing the trust level, the trustor sends a signal to the trustee about how much risk he is willing to take. He also decides on how efficient the game is going to be. If he chooses to send 0 EUR he provides the lowest possible efficiency, if he chooses to send 50 EUR he reaches medium efficiency and if he chooses to send 100 EUR he reaches the highest efficiency. The decision of the norm enforcer to transfer points to the trustor is assumed to be based on the observed trust level as well as on the behavior of the trustee. Figure 2.3 shows the transfers sent to the trustor of the control group and the police applicants. Additionally, Table 2.5 indicates the frequencies of particular behaviors among both study groups.

Figure 2.3: Boxplot - Points allocated to the trustor in the TPP/R Game




First we look at the case in which the trustor decided to send 0 EUR and therefore excludes

the possibility for the trustee to reciprocate. This action implies that both players receive their initial endowment and is regarded as inefficient. Around 35 percent of all norm enforcers chose, on average, to punish the trustor. Table 2.5 therefore indicates the frequencies of behavior among both study groups. The majority, around 48 percent, do not transfer any points in this situation. Interestingly, there is also a fraction of subjects, around 16 percent, that reward such a behavior of the trustor. In the case where the trustor decides to send 50 EUR, A50B100, while the trustee reciprocates, we observe that a large fraction of the control group, 49 percent, and an even higher fraction of the police applicants, 59 percent, are willing to reward. Although around 50 percent of the participants restrain from any transfer, we observe that people commit to the positive trust signal of the trustor. If the trustor now provides his full endowment of 100 EUR, A100B200, we observe an increase in rewards. Interestingly, there are fewer people, 38 percent of the control group and 44 percent of the police applicants, willing to provide points in order to do so.

On the other hand, when the trustor is confronted with a situation in which the trustee chooses not to reciprocate, he faces a loss. If he first provided 50 EUR, A50B0, we observe 78 percent of the control group and 82 percent of the police applicants provide a reward to the trustor. The frequencies of reward transfers are even higher, 82 percent compared to 86 percent, when the trustor first provided 100 EUR. The presence of a deviation of the distribution norm causes more than 78 percent of the people to send a reward to the trustor, and only a very low fraction is willing to refrain from a transfer or even punish the trustor in this situation.

Table 2.5: Points allocated to the trustor in the TPP/R Game

| Variable | Control Group | | | | | Police Applicants | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Frequency | | | Obs. | Mean | Frequency | | | | |
| | | | % pun | % zero | % rew | | | % pun | % zero | % rew | | |
| Transfer to A if A0B0 | 976 | -5.25 | 35.3% | 49.4% | 15.4% | 630 | -4.55 | 34.3% | 47.8% | 17.9% | 0.69 | 0.410 |
| Transfer to A if A50B100 | | 6.39 | 3.0% | 47.9% | 49.2% | | 9.22 | 2.7% | 38.7% | 58.6% | 2.82 | 0.000*** |
| Transfer to A if A100B200 | | 9.18 | 3.0% | 58.1% | 38.9% | | 11.77 | 1.8% | 54.1% | 44.1% | 2.59 | 0.015** |
| Transfer to A if A50B0 | | 19.80 | 0.8% | 20.8% | 78.4% | | 21.57 | 0.8% | 16.8% | 82.4% | 1.77 | 0.049** |
| Transfer to A if A100B0 | | 33.18 | 0.0% | 18.1% | 81.9% | | 39.10 | 0.0% | 14.1% | 85.9% | 5.91 | 0.000*** |

Note: Table reports the mean and the frequencies of transfer decisions to the trustor; since participants had to decide how much they want to transfer in the range between -160 to +160 points; % pun denotes the frequency when points are sent for punishment, % zero denotes the frequency when zero points are transferred and % rew describes the frequency of rewards for the Control Group and the Police Applicants; statistical significance of differences is indicated as: *p<.10, **p<.05, ***p<.01

To analyze the significance of differences in the decisions of norm enforcers, Table 2.5 provides an overview of the average transfers to the trustor. For each strategy of the trustor and trustee, the average transfers are compared among the study groups using the Mann-Whitney U-Test. In the situation A0B0 we observe no differences (Mann-Whitney U-Test: p-value=0.410, two-sided) between the groups, with the result that the trustor is punished with at least -4.55 points. It seems that not providing any amount for the trustee is considered as a deviation from the efficiency norm and therefore needs to be punished. When the trustor now provides 50 EUR (100 EUR) and his trust is rewarded with reciprocal behavior, A50B100 (A100B200)

we observe different transfer levels among the study groups. Police applicants are willing to reward the trustor with 9.22 (11.77) points for their trust level, which is more than the control group, who provided 6.39 (9.18) points. The difference at the medium efficiency level, is significant (Mann-Whitney U-Test: p-value=0.000, two-tailed) and slightly higher than for the case of the high efficiency level, where the difference is also present (Mann-Whitney U-Test: p-value=0.015, two-tailed). Looking at cases where the trustee deviated and decided to keep all transfers, we find a strong increase in reward transfers. First, in the case of A50B0, we observe that the police applicants provide 21.57 points, on average, to subsidize the trustor, whereas subjects of the control group only provide 19.80 points to do so. The differences between the subject groups is significant at the 5 percent level (Mann-Whitney U-Test: p-value=0.049, two-tailed). The subsidy is even stronger if the trustor lost more money through the deviation of the trustee, the case A100B0. Again, police applicants are willing to waive more of their own payoff to increase the payoff of the trustor, on average by 39.10 points. This is significantly higher (Mann-Whitney U-Test: p-value=0.000, two-tailed) than the 33.18 points provided by the control group. The differences between the transfers in the cases A50B0 and A100B0 are significant for both study groups[34].

An interpretation might be that a norm enforcer, who observes a deviation of the efficiency norm, is willing to punish this deviation. But when efficiency is at a medium or even high level, people are willing to reward this signal of trust. Regarding the increase in reward transfers, when the trustor has been defrauded, we were not able to disentangle what norm – efficiency or subsidizing people who suffered a loss – is driving the increased transfers. One could hypothesize that an additional norm should be considered as an increment to the prevailing norm. On the other hand, if a norm is considered to be more important there might be also a substitution effect. Anyhow, since the reward transfers from the police applicants are significantly higher, than those from the high school students, this might be an indication for a self-selection of special types. Rewarding conformity and punishing deviation from the efficiency norm can be considered as the driving forces behind the transfer decisions to the trustor.

**Result 2:** *Trusting, and therefore efficient, behavior of the trustor is rewarded by the norm enforcers in both study groups. The reward transfers are almost twice as high, if this trust is answered by a deviation of the trustee and if inequality becomes present. Police applicants show a higher propensity to reward a person who suffered such a disadvantage.*

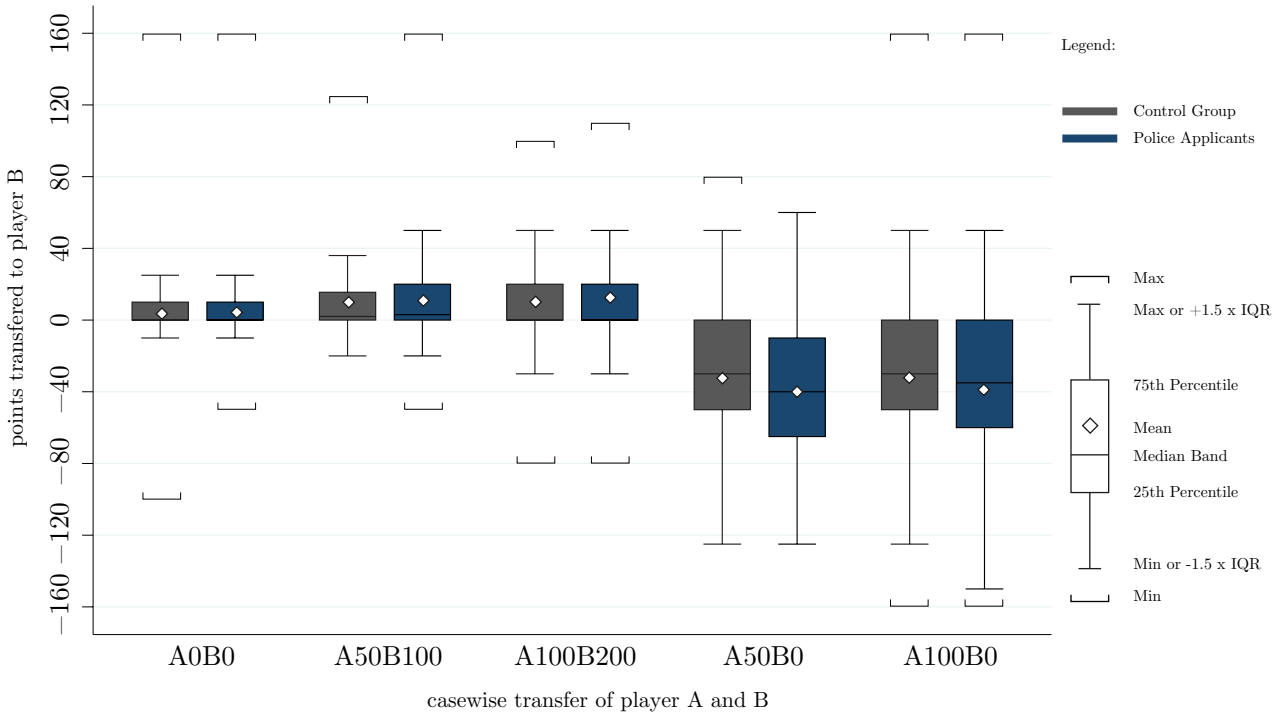
### 2.4.3 Player B - Distribution and non-reciprocal behavior

While we focused on the transfers to the trustor in the previous section we are now interested in the transfers to the trustee. Again all participants in the role of the norm enforcer played also the role of the trustee beforehand. In fact, a trustee in our game is solely deciding upon

[34]Difference among police applicants is $\Delta$17.53 points (t-test: p-value=0.000, two-tailed) and significant at the 1 percent level. Also difference among the high school students of $\Delta$13.38 is significant at the 1 percent level (t-test: p-value=0.000, two-tailed).

the level of the back transfer to the trustor and therefore upon the distribution of the payoffs. If the trustor provided 50 EUR (100 EUR) the trustee decides whether he wants to transfer nothing or 100 EUR (200 EUR) back. We, therefore, assume the transfers of the norm enforcer to be dependent on the decision of the trustee, whether he wants to reciprocate and sustain equality among the players or not. Figure 2.4 shows the transfers sent to the trustee of the control group and the police applicants.

Figure 2.4: Boxplot - Points allocated to the trustee in the TPP/R Game




Again we look first at the case in which the trustor decided to send 0 EUR and therefore excluded the possibility of the trustee reciprocating. Around 30 percent of all norm enforcers chose, on average, to reward the trustee. Unlike previously, we now observe a majority, around 66 percent, do not transfer any points in this situation. In the case where the trustor decides to send 50 EUR, A50B100, and the trustee behaved reciprocally we observe that a large fraction of the control group, 53 percent, and an even higher fraction among the police applicants, 61 percent, are willing to reward this. Although some subjects refrain from any transfer, we observe that the subjects are willing to reward the trustworthiness of the trustee. If the trust level increases and the trustor providing the full endowment, 100 EUR, while the trustee reciprocates, A100B200, we observe a slight increase in rewards. Interestingly, there are fewer people, 42 percent among the control group and 45 percent among the police applicants, willing to provide points in order to do so. On the other side when the trustee chooses not to reciprocate we observe distinctive punishment pattern. If the trustor first provided 50 EUR, A50B0, we observe that 75 percent of the control group and 81 percent of the police applicants provide punishments of the trustee. The frequencies of points transferred for punishment are lower, 68

percent of the control group compared to 72 percent of the police applicants, when 100 EUR was first provided. The presence of a deviation from the distribution norm causes people to punish the trustee, and only a very low fraction is willing to refrain from transferring.

Table 2.6: Points allocated to the trustee in the TPP/R Game

| Variable | Control Group | | | | | Police Applicants | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Frequency | | | Obs. | Mean | Frequency | | | | |
| | | | % pun | % zero | % rew | | | % pun | % zero | % rew | | |
| Transfer to B if A0B0 | 976 | 4.28 | 2.3% | 68.1% | 29.6% | 630 | 5.53 | 2.1% | 64.1% | 33.8% | 1.26 | 0.048** |
| Transfer to B if A50B100 | | 9.31 | 2.5% | 44.4% | 53.2% | | 12.18 | 2.5% | 35.7% | 61.8% | 2.87 | 0.000*** |
| Transfer to B if A100B200 | | 11.70 | 2.1% | 56.3% | 41.7% | | 13.59 | 3.2% | 52.4% | 44.5% | 1.88 | 0.265 |
| Transfer to B if A50B0 | | -34.98 | 74.8% | 23.3% | 1.9% | | -40.94 | 80.5% | 17.3% | 2.2% | 5.97 | 0.000*** |
| Transfer to B if A100B0 | | -35.25 | 68.0% | 30.4% | 1.5% | | -39.18 | 72.4% | 25.7% | 1.9% | 3.93 | 0.032** |

Note: Table reports the mean and the frequencies of transfer decisions to the trustee; since participants had to decide how much they want to transfer in the range between -160 to +160 points; % pun denotes the frequency when points are sent for punishment, % zero denotes the frequency when zero points are transferred and % rew describes the frequency of rewards for the Control Group and the Police Applicants; statistical significance of differences is indicated as: *p<.10, **p<.05, ***p<.01

Since we observe that people react and commit to the actions of the trustee, we are now interested in the impact of a norm enforcer's transfer decisions. Table 2.6 provides an overview of the average transfers among the groups and the frequencies of reward, no transfer and punishment of the trustee. We observe that the control group subsidizes the trustee with 4.28 points on average, which is significantly lower (Mann-Whitney U-Test: p-value=0.048, two-tailed) than the provision of 5.53 points from the police applicants. While we observed no differences between the subject groups in the punishment of the trustor in this case, we now see that police applicants are willing to subsidize a person, who had not been given the chance to act in a trustworthy manner, more than the control group. Since there is no inequality present, we assume that they compensate for a suffered loss due to inefficiency. Furthermore, when we consider the cases where the trustor chose to transfer 50 EUR (100 EUR) and the trustee chose to reciprocate, we observe that the control group transfers 9.31 (11.70) points, while the police applicants send 12.18 (13.59) points as a reward. The difference between the groups in case A50B100 is significant at the 1 percent level (Mann-Whitney U-Test: p-value=0.000, two-tailed), whereas we do not find any difference in the case A100B200. It seems that both groups are willing to reward the norm conforming behavior of the trustee. This reward is significantly higher among the police applicants, if there is only a medium level of efficiency present. When both, the trustor and the trustee, acted highly efficiently, then trustworthy people, who chose to apply for the police, do not behave differently from people who chose to apply for other jobs. Finally, if we consider the case where the trustee decided not to reciprocate and to keep the total payoff, we observe high punishment levels. High school students of the control group chose to punish the trustee, if the trustor transferred 50 EUR (100 EUR) by on average -34.98 (-35.25) points, whereas police applicants punished by -40.94 (-39.18) points. Again the difference for the case A50B0 is significant at the 1 percent level (Mann-Whitney U-Test: p-value=0.000, two-tailed) and, furthermore, we observe a significance at the 5 percent level

for the case A100B0 also (Mann-Whitney U-Test: p-value=0.032, two-tailed). Both groups are willing to punish deviant behavior that causes inequality among the participants. Police applicants in this situation are willing to sacrifice more points in order to do so. We also find the differences between the transfers in the cases A50B0 and A100B0 within the groups to be insignificant[35].

This revealed transfer behavior might be an indicator for two drivers of norm enforcement among the study groups. As long as the trustee is reciprocating, he is rewarded. When he had not been given the possibility to reveal his trustworthiness, because the trustor chose a low efficiency level, he is compensated by almost the same amount that the trustor is punished. In the cases that the trustor provided a transfer, a trustee is compensated higher than the trustor. The higher the trust level of the trustor, the higher also the compensation for the trustee's fair behavior. Since costs for behaving according to the fairness norm increase within the trust level, it might also explain the increase in rewards. But the situation is different, when the trustee decides not to back transfer. We would expect that punishment increases as the trust level and the loss increases. Interestingly, there is no difference in the magnitude of punishments in the situations A50B0 and A100B0 within the study groups. Compared to the transfers to the trustor, where a higher trust level leads to higher compensation in the case of a deviation, we assume punishment to be independent of the loss suffered and the resulting inequality. In fact, people react to higher inequality by choosing higher rewards rather than higher punishments. Aversion to observe inequality is compensated through subsidizing disadvantaged people rather than through the punishment of people who took advantage of it. Therefore, the punishment of deviant behavior seems to be the main driver behind the transfer decisions.

**Result 3:** *A trustee is rewarded as long as he chooses to back transfer to the trustor and to sustain equality. If the trustee chooses not to reciprocate he is punished by more than 68 percent of the study groups. Police applicants punish deviant behavior and reward trustworthiness more than people who apply for other jobs. Punishment depends on the trustees choice of being trustworthy or not; its magnitude does not vary with the level of inequality.*

### 2.4.4 Joint decision of reward and punishment on personal level

According to the theory of Prendergast (2007), the differences in observed behavior might be driven by a self-selection of two special types into the police organization. The first type might act altruistically towards their client[36], by taking actions in their favor and the second might be hostile to them, by treating them unfavorably. The theory states that only people with a

[35]Difference among police applicants is $\Delta 1.76$ points (t-test: p-value=0.2666, two-tailed) and insignificant. Also the difference among the high school students of $\Delta 0.27$ is insignificant (t-test: p-value=0.8141, two-tailed).

[36]Prendergast uses the notation clients to describe the people that receive a treatment from the agents. Agents in our could be e.g. social workers, police officers or in our experiment police applicants that influence the payoffs of others.

strong bias in one direction might gain additional utility from allocation of a treatment in a specific situation. Thus the self-selection becomes bifurcated into these two types.

On the group level, we find that the police applicants provide higher allocations for reward *and* for punishment. To analyze whether this is due to the presence of two separate types of people, we look at the correlations of rewards and punishments at the individual level. In our online experiment we asked the participants to state their transfer decisions to the trustor and the trustee for each strategy combination they could have played. For each combination, subjects were endowed with 160 points and could either keep them or use up the points for rewarding and/or punishing. Table 2.7 provides an overview on the correlations of transfer decisions between study groups.

Table 2.7: Correlation of Transfer Decisions

**Control Group (N=976)**

| | | Transfers to A | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to B | A0B0 | 0.147*** | 0.186*** | 0.077*** | 0.322*** | 0.205*** |
| | A50B100 | -0.257*** | 0.717*** | 0.692*** | 0.318*** | 0.299*** |
| | A100B200 | -0.231*** | 0.555*** | 0.882*** | 0.313*** | 0.252*** |
| | A50B0 | 0.244*** | -0.105*** | -0.115*** | 0.010 | -0.251*** |
| | A100B0 | 0.252*** | -0.205*** | -0.218*** | -0.132*** | -0.044 |

**Police Applicants (N=630)**

| | | Transfers to A | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to B | A0B0 | 0.122*** | 0.148*** | 0.087** | 0.317*** | 0.215*** |
| | A50B100 | -0.168*** | 0.780*** | 0.692*** | 0.369*** | 0.318*** |
| | A100B200 | -0.125*** | 0.702*** | 0.877*** | 0.287*** | 0.315*** |
| | A50B0 | 0.177*** | -0.078* | -0.108*** | 0.068* | -0.163*** |
| | A100B0 | 0.168*** | -0.109*** | -0.180*** | -0.087** | 0.046 |

Note: statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

First, we were interested whether the allocations of the norm enforcer within the same combination of trustor and trustee transfers were correlated[37]. The highlighted coefficients indicate that the decisions to transfer were significantly positive correlated in the cases A0B0, A50B100 and A100B200. Thus a norm enforcer, who is willing to reward the trustor is also willing to reward the trustee. This correlation can be found within both groups. Interestingly, we find almost no correlation between the transfers for the cases in which the trustee decided to defraud, A50B0 and A100B0. This confirms previous findings, that the decision to reward the trustor and its magnitude is independent of the allocation to the trustee.

[37]Note that participants could decide to allocate their 160 points within a range of -160 and 160 for each of the strategies the trustee and the trustor could have played. Assigning a negative point reduces the payoff of the respective player, while assigning a positive point increases his payoff. The cumulated absolute value may not exceed 160 points in each strategy combination of the trustor and the trustee and the remains could not used for another case.

Second, if we focus on the overall correlations off the diagonal, we find strong interdependencies between the combinations for both subject groups. These suggest that, on the individual level, we observe the participants providing rewards as well as punishments. Take, for instance, the combination in which the trustor decided to provide 100 EUR and the trustee reciprocates with 200 EUR, A100B200. We observe the transfers from the norm enforcer to the trustor and the trustee to be highly correlated. If we compare this to the correlations of transfers to the trustor in A100B200 and the transfer to the trustee in A100B0, we also find a significant correlation. Therefore, an individual is providing rewards as well as punishments at the same time. This points towards the notion that individuals in our setting are of a mixed type. We find this to be consistent for the control group as well as for the police applicants. Since we know that police applicants provide more points in both extremes, reward and punishment, the data tends to confirm a self-selection of a special mixed-motive type into the police organization. This corresponds to the view presented in our introduction: A Policeman is providing help and is enforcing the current laws at the same time. Thus, the policemen who gain additional utility from the correct treatment of their clients, regardless whether this is a reward or a punishment, face lower costs in their duty and therefore provide higher effort.

**Result 4:** *We find the transfer decisions to be correlated in the same patterns for both study groups. Reward transfers are correlated, whereas the use of rewards and punishments within the states of nature where the trustee defrauded are not. Since police applicants provide overall more points for allocation of rewards and punishments, the correlations to the other states of nature tends to confirm self-selection of only one special type, being more altruistic and more punitive at the same time.*

## 2.5 Robustness of findings

So far, we were able to identify differences between the group of police applicants and the control group with respect to the enforcement of norms. As predicted, we find that police applicants are, on average, indeed more willing to influence the payoff of other players than those who have not applied to the police. This willingness and the enforcement patterns we identify are dependent on the observed state of nature between the trustor and the trustee. In order to prove the robustness of these findings, we next discuss several other possible influencing factors.

### 2.5.1 Personal characteristics

As stated in Section 2.2.1, we observe significant differences between the subject groups with respect to their socio-demographic background. Therefore we are interested, whether the differences in transfers to the trustor and trustee are solely determined by the assumed self-selection into the police or whether there are any personal characteristics, that might explain observed behavior of the participants?

Since we were able to identify significant correlations in Section 2.4.4 between the allocations, we have to make use of more sophisticated statistical methods in the following analysis. To provide the effect of the application to the police on the allocations to the trustor and the trustee, we used OLS as well as a set of seemingly unrelated regressions (SUR) on an application dummy with and without additional controls, whereby the transfers in each case A0B0, A50B100, A100B0, A50B0 and A100B0 are the dependent variables.

Since the transfers to the trustor and the trustee might not be independent, the SUR provide a convenient vehicle for testing hypotheses about these relationships. Following the detailed work of Fiebig (2007), SUR allows the estimation of a set of regression equations, applying the method of generalized least-squares to the whole system of equations, rather than equation-by-equation. As, in our cases, the individual equations are related, even though superficially they may not seem to be; they are seemingly unrelated. Since the GLS estimator reduces to OLS if the same set of explanatory variables is used in the regressions, the joint estimation might therefore lead to gains in efficiency[38]. In the SUR, first presented in Zellner (1962), the efficiency gains from joint estimation tend to be larger, when the explanatory variables in different equations were not highly correlated, but the disturbances from these equations were (Fiebig, 2007)[39].

Each regression includes three specifications: the first (1 OLS) does not include any control variable and confirms the observations in the results section; the second specification (2 OLS) controls for gender, age, log of income, citytype they were raised, educational level[40], academic background[41] and their migration background; finally, the third specification (3 SUR) replicates the regressions from the second specification using SUR to jointly estimate the transfer to the trustor and the trustee using the aforementioned control variables. Complete regression tables, including OLS specifications for comparison, Table 2.A.6a and Table 2.A.7a, can be found in the Appendix 2.A. Note that significance level might decrease because the number of observations is lower than in the first specification[42]. Table 2.8 provides an short overview on the results of the series of SUR as well as information about the residual correlations and the results of the Breusch-Pagan Test on heteroscedasticity.

OLS specifications, which do not include any controls, confirm the previous findings that transfers of the norm enforcer are in some cases significantly higher among the police applicants

[38]For a more complete characterization of when OLS is equivalent to GLS see Bartels and Fiebig (1991)

[39]Work of Binkley and Nelson (1988) shows that even when correlation among variables across equations is present, efficiency gains from joint estimation can be considerable when there is multicollinearity within an equation.

[40]Since we only observe differences in the current educational level among the police applicants we assume Abitur to be the benchmark category, whereas we introduce dummies for Realschule and Fachhochschule. In total we observe 6 participants to have the current educational level of Realschule and 149 participants at the level of Fachabitur.

[41]Whether one parental part has at least the educational level of the German Abitur.

[42]The experimental part was at the beginning of the study. Since the demographic questions are at the end of the study, some participants aborted the questionnaire beforehand. The sequence of questions can be found in Appendix A.

Table 2.8: Seemingly Unrelated Regression (SUR) of transferred points to trustor and trustee in the TPP/R Game (short)

| **SUR(1)** | **Dependent Variable: Transfer to A if** | | | | |
|---|---|---|---|---|---|
| | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| **Effect of being Police Applicant** | **0.454** | **1.790**** | **2.479**** | **2.015*** | **5.018***** |
| **Control** | | | | | |
| Gender | | | | | |
| Age | | | | − * | |
| Log of Income | +** | | | | |
| Citytype | | | | | |
| Educational level: Fachhochschulreife | +* | +** | | +** | +** |
| Educational level: Realschule | +** | +** | +** | +* | − * |
| Academical Background | | | +* | +** | +*** |
| Migrational Background | | | | | |
| **SUR(2)** | **Dependent Variable: Transfer to B if** | | | | |
| | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| **Effect of being Police Applicant** | **1.219*** | **2.412**** | **2.003** | **-4.940**** | **-4.882**** |
| **Control** | | | | | |
| Gender | − *** | | | | |
| Age | − * | | | | |
| Log of Income | | | | | |
| Citytype | | | | | − ** |
| Educational level: Fachhochschulreife | | | | | |
| Educational level: Realschule | | +* | +* | | |
| Academical Background | | +* | +** | − ** | − *** |
| Migrational Background | | | | | − ** |
| | **SUR indicators** | | | | |
| | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Residual correlations between (1) and (2) | 0.145 | 0.741 | 0.875 | 0.031 | -0.002 |
| Breush-Pagan Test: $chi^2(1)$ | 0.000*** | 0.000*** | 0.000*** | 0.222 | 0.940 |

Note: statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

than in the control group of high school students. If we include control variables, we are able to determine whether these differences might somehow be explained by other personal characteristics. SUR(1) reports the effects of regressions on the transferred points to the trustor. We find that none of the control variables is able to render the effect of being a police applicant on the transfer to the trustor insignificant. People that choose to apply to the police are willing to reward a person that trusts other people more than are people who apply for other jobs. Police applicants with a low current educational level seem to incorporate an additional motivation for the enforcement of norms. Furthermore, we find that subjects with an academic background are willing to provide more points to subsidize the trustor. The effect of police applicants providing higher transfers is also confirmed in SUR(2), where the regressions on the transferred points to the trustee are reported. Again we observe police applicants to have a significantly higher propensity to reward in the cases where the trustee behaved reciprocally and to punish when he chose to deviate from a fair payoff distribution. Current educational level in this specification does not have the same impact as before. Moreover, we see that

subjects with an academical background are willing to reward more in the situations A50B100 and A100B200 and to punish more in the cases A50B0 and A100B0. This might be an indicator that such people have been raised and educated in a way such that they are more willing to enforce norms.

Since transfer decisions to the trustee and the trustor were determined simultaneously, we consider them to be related to each other. Therefore we also analyze the correlation between the residuals of the regression using the Breusch-Pagan Test of independence. We observe the residuals of the transfers to the trustor, SUR(1), and the trustee, SUR(2), to be significantly correlated in the situations A0B0, A50B100 and A100B200. This indicates, that a transfer decision to one player is also dependent on the decision on a transfer to another player. On the other hand, we were not able to determine a dependence of residuals in the cases A50B0 and A100B0. We therefore confirm that, while the choice of rewards to each player by the norm enforcer are correlated to each other in the cases where the trustee reciprocates, we observe the choices of punishments to be independent of the reward choices in the cases where the trustee defrauded. Norm enforcers of both groups behave in the same pattern, but police applicants again reveal a higher willingness to enforce norms. Overall, personal characteristics do influence the behavior as norm enforcer, but police applicants still reveal that they are of a special type.

### 2.5.2 Robustness among the reduced subject pool

In Section 2.2.1, we discuss significant differences between police applicants and high school students in terms of their personal characteristics, when we look at the complete participant pool. To check whether our results were driven by the participation of non comparable subjects or not, we repeat our analysis focusing on a reduced subject pool. We assume participants with an age range of 16-22 years and a common current educational level of Abitur to be a reasonable choice for comparison, since they can be considered to be in the same phase of life. Again, we first focus on the general willingness of the norm enforcer to provide points for allocation in the TPP/R game. Table 2.9, therefore, shows the total allocation frequencies among the two groups for the reduced data set.

As with the complete data set, we observe that, out of 388 police applicants (953 high school students), only 32 (87) subjects, 8.25 (9.13) percent chose not to contribute any points, either for sanctions or for rewards in any situation. In fact, out of the reduced population 329 police applicants (763 high school students), in percent 84.79 (80.06), participants chose to punish at least once, with a total average amount of punishment of -104.48 (-101.75) points. On the other hand, out of the same population of participants, in total 354 police applicants(845 high school students), 91.24 (88.67) percent, chose to reward at least once, with a total average amount of reward of 127.76 (112.51) points. We therefore observe the same pattern of transfers as in the complete data set.

Furthermore, if we analyze transfer decisions in detail, we are not able to identify serious

Table 2.9: Frequencies of Transfer Behavior in the TPP/R Game (16-22 years and Abitur)

| Variable | Control Group (1) | | | | Police Applicants (2) | | | |
|---|---|---|---|---|---|---|---|---|
| | Obs | N of Obs | % of Obs | Avg. spent points | Obs | N of Obs | % of Obs | Avg. spent points |
| **Observed willingnes for transfer** | | | | | | | | |
| No Transfer at all | | 87 | 9.13% | 0.00 | | 32 | 8.25% | 0.00 |
| At least one punimshment | 953 | 763 | 80.06% | -101.75 | 388 | 329 | 84.79% | -104.48 |
| At least one reward | | 845 | 88.67% | 112.51 | | 354 | 91.24% | 127.76 |

Note: Table reports the frequencies of transfer decisions, since participants had to decide how much they want to transfer in the range between -160 to +160 points;

differences to our main results. Table 2.10 presents the transfers as well as the frequencies of transfer behavior to the trustor and the trustee for the reduced data set.

Table 2.10: Transfer Decisions and Frequencies of Transfer Behavior in the TPP/R Game (16-22 years and Abitur)

| Variable | Control Group | | | | | Police Applicants | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Frequency | | | Obs. | Mean | Frequency | | | | |
| | | | % pun | % zero | % rew | | | % pun | % zero | % rew | | |
| Transfer to A if | | | | | | | | | | | | |
| A0B0 | | -5.25 | 35.3% | 49.2% | 15.5% | | -5.04 | 37.4% | 45.4% | 17.3% | 0.22 | 0.857 |
| A50B100 | | 6.40 | 3.0% | 47.9% | 49.1% | | 8.94 | 2.3% | 37.6% | 60.1% | 2.54 | 0.000*** |
| A100B200 | 953 | 9.16 | 3.0% | 58.2% | 38.7% | 388 | 11.45 | 1.3% | 51.3% | 47.4% | 2.29 | 0.006*** |
| A50B0 | | 19.66 | 0.8% | 20.9% | 78.3% | | 21.11 | 0.5% | 16.2% | 83.2% | 1.45 | 0.121 |
| A100B0 | | 33.29 | 0.0% | 18.2% | 81.9% | | 37.04 | 0.0% | 13.9% | 86.1% | 3.75 | 0.017** |
| Transfer to B if | | | | | | | | | | | | |
| A0B0 | | 4.29 | 2.3% | 68.1% | 29.6% | | 5.80 | 2.32% | 62.37% | 35.31% | 1.51 | 0.025** |
| A50B100 | | 9.35 | 2.5% | 44.5% | 53.0% | | 12.25 | 2.58% | 32.73% | 64.69% | 2.90 | 0.000*** |
| A100B200 | 953 | 11.68 | 2.1% | 56.4% | 41.6% | 388 | 13.19 | 2.84% | 49.48% | 47.68% | 1.51 | 0.118 |
| A50B0 | | -35.07 | 75.0% | 23.0% | 2.0% | | -39.34 | 81.19% | 16.49% | 2.32% | 4.27 | 0.014** |
| A100B0 | | -35.22 | 68.2% | 30.2% | 1.6% | | -37.43 | 73.45% | 24.48% | 2.07% | 2.22 | 0.157 |

Note: Table reports the mean and the frequencies of transfer decisions to the trustor and the truste among participants within the age range 16-22 and with the educational level Abitur; since participants had to decide how much they want to transfer in the range between -160 to +160 points; % pun denotes the frequency when points are sent for punishment, % zero denotes the frequency when zero points are transferred and % rew describes the frequency of rewards for the Control Group and the Police Applicants; statistical significance of differences is indicated as: *p<.10, **p<.05, ***p<.01

In fact, we observe that the norm enforcer of the reduced data set show nearly the same average transfer decisions. Compared to the complete data set, we were not able to identify differences in transfers of the high school students, in terms of average transfers as well as frequencies of transfer behavior. Regarding the transfers of the police applicants, we observe a decrease of differences in average transfers compared to the high school students for all cases that the trustor and the trustee could have played. Police applicants in the comparable age range 16-22 and with the educational level Abitur thus become more similar to the control group of high school students with respect to their transfers as a norm enforcer. Still, we do observe significant differences between the subject groups. We found differences in the transfers to the trustor in the cases A50B100 and A100B200 to be significant at the 1 percent level (Mann-

Whitney U-Test: p-value<=0.006, two-tailed), therefore police applicants reward risky trusting behavior of the trustee. In the case A50B0, where the trustor provides 50 EUR and the trustee defrauds, we were not able to determine a significant difference anymore (Mann-Whitney U-Test: p-value=0.121, two-tailed). Only in the case A100B0, where the trustor provides his full endowment and the trustee does not reciprocate, we could still observe differences significant at the 5 percent level (Mann-Whitney U-Test: p-value=0.017, two-tailed). Thus, even in the reduced subset, police applicants are willing to reward people who have been defrauded after they trusted another person. Furthermore, when we focus on the transfers to the trustee we still observe that the norm enforcer rewards behaving reciprocally, the cases A0B0, A50B100 and A100B200. While we find differences to be significant, at least at the 5 percent level in the first two cases (Mann-Whitney U-Test: p-value<=0.025, two-tailed), we do not observe differences to be significant in the latter case. Interestingly, when we look at the transfers for the cases where the trustee decided to defraud, we only find the difference in the case A50B0 to be significant at the 5 percent level (Mann-Whitney U-Test: p-value=0.014, two-tailed), while the difference in the case A100B0 is not significant. Police applicants of the reduced subset are thus willing to punish a trustee, if he chose not to reciprocate, but only for a mediocre trust level.

Even under the premise of a reduced data set, we were able to identify similar results to the complete data set in terms of transfer decisions. In Section 2.4.4 we further identified the self-selection of a special type of person into the police, by looking at the correlations of decisions on the individual level. Table 2.11 provides an overview on the correlations of transfer decisions between the study groups of the reduced data set.

Table 2.11: Correlation of Transfer Decisions (16-22 years and Abitur)

**Control Group (N=953)**

| | | Transfers to A | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to B | A0B0 | 0.146*** | 0.183*** | 0.076** | 0.330*** | 0.205*** |
| | A50B100 | -0.258*** | 0.714*** | 0.693*** | 0.323*** | 0.303*** |
| | A100B200 | -0.231*** | 0.553*** | 0.881*** | 0.310*** | 0.259*** |
| | A50B0 | 0.245*** | -0.100*** | -0.113*** | 0.008 | -0.253*** |
| | A100B0 | 0.250*** | -0.201*** | -0.216*** | -0.138*** | -0.043 |

**Police Applicants (N=388)**

| | | Transfers to A | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to B | A0B0 | 0.056 | 0.030 | -0.029 | 0.241*** | 0.209*** |
| | A50B100 | -0.180*** | 0.682*** | 0.620*** | 0.345*** | 0.298*** |
| | A100B200 | -0.072 | 0.651*** | 0.848*** | 0.291*** | 0.338*** |
| | A50B0 | 0.178*** | -0.077 | -0.115** | 0.092* | -0.147*** |
| | A100B0 | 0.186*** | -0.133*** | -0.199*** | -0.097* | 0.006 |

Note: statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

Similar to the results for the complete data set, we find the same correlation of transfer decisions at the individual level for the high school students. Since the reduction substantially decreased the subject pool of police applicants, we find the correlations of transfers from the norm enforcer to decrease for almost all combinations of the states of nature of the trustor and the trustee. Still, we do find the reward transfer decisions to the trustor and the trustee to be correlated in the cases A50B100 and A100B200, whereas we find almost no correlation of rewards to the trustor and punishments to the trustee in the cases A50B0 and A100B0. Furthermore, we again find the correlations between the other decision cases indicate that police applicants – even in the reduced data set - are willing to reward and to punish at the same time. Since we know that police applicants also provide more allocations, we confirm that people self selecting into the police are of a mixed-type rather than showing a strong bias only towards rewards or only towards punishments.

To analyze whether these results might be explained by other characteristics, we replicated the regressions from Section 2.5 using the reduced data set[43]. Table 2.12 provides a short overview of the results of the series of SUR as well as information about the residual correlations and the results of the Breusch-Pagan Test on heteroscedasticity.

First, we look at the results of the SUR(1) on the transfers to the trustor. Again we find the effect of being a police applicant to be significantly positive in the cases A50B100, A100B200, A50B0 and A100B0. As in our regression for the complete data set, we were able to identify the same effects of gender, income and academical background. It seems that the latter factor especially is of great importance, pointing to the fact that socialization in households with at least one academically educated parent influences behavior in a norm enforcement game. Second, the analysis of transfers of norm enforcers to the trustee is presented in SUR(2). Again we observe that police applicants in the reduced data set have a significantly higher propensity to reward in the cases where the trustee behaved reciprocally and to punish when he chose to deviate. Unlike the complete data set, we were not able to identify a significantly higher transfer for the case A0B0. But we find that subjects with an academic background are willing to reward more in the situations A50B100 and A100B200 and to punish more in the cases A50B0 and A100B0, which is in line with the SUR of the complete data set.

Regarding the correlation between the residuals of the regression, we again use the Breusch-Pagan Test of independence. We observe that the residuals of the transfers to the trustor, SUR(1), and the trustee, SUR(2), are significantly correlated in the situations A0B0, A50B100 and A100B200. As before, this indicates, that a transfer decision to one player is also dependent on the decision as to a transfer to another player. We were not able to determine any dependence of residuals in the cases A50B0 and A100B0. For the reduced data set, we confirmed that the choice of rewards to each player by the norm enforcer is mutually correlated in the cases where the trustee reciprocated. Again, we find the choice of punishment to be independent of the

[43]Note that due to the limitation of the data set we excluded the dummy variable for their current educational level.

Table 2.12: Seemingly Unrelated Regression (SUR) of transferred points to trustor and trustee in the TPP/R Game (short) (16-22 years and Abitur)

| **SUR(1)** | **Dependent Variable: Transfer to A if** | | | | |
|---|---|---|---|---|---|
| | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| **Effect of being Police Applicant** | **0.124** | **2.439*** ** | **3.008** ** | **2.128*** | **4.913*** ** |
| **Control** | | | | | |
| Gender | | | | | |
| Age | | | | – * | |
| Log of Income | – * | | | | |
| Citytype | | | | | |
| Academical Background | – * | | +** | +* | +*** |
| Migrational Background | | | | | |
| **SUR(2)** | **Dependent Variable: Transfer to B if** | | | | |
| | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| **Effect of being Police Applicant** | **1.267** | **3.181*** ** | **2.885** ** | **-5.391** ** | **-5.096** ** |
| **Control** | | | | | |
| Gender | – ** | | | | |
| Age | | | | | |
| Log of Income | | | | | |
| Citytype | | | | | – ** |
| Academical Background | | +** | +*** | – ** | – *** |
| Migrational Background | | | | | |
| | **SURE indicators** | | | | |
| | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Residual correlations between (1) and (2) | 0.116 | 0.703 | 0.869 | 0.034 | -0.019 |
| Breush-Pagan Test: chi$^2$(1) | 0.000*** | 0.000*** | 0.000*** | 0.213 | 0.496 |

Note: statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

choice of reward in the case where the trustee defrauded.

Although the differences in the reduced subject pool diminish in terms of personal characteristics and of transfer decisions as norm enforcer, none of the controls is able to render the effect of being a police applicant insignificant. This confirms our findings in Section 2.4.

### 2.5.3 Job applications and high school students

Since the observed differences could not be refuted by the personal characteristics of the participants, one can assume that differences might be driven by other distinctive factors. Since we consider police applicants and high school students to be in the same situation – at the threshold of applying for jobs – one can argue that people who are in an active application process might behave different than those who have not chosen to apply for a job so far. By submitting an application, people want to send a signal to the employer and therefore they might behave differently in our experiment. In order to control for that, we asked high school students whether they hat applied for a job so far. Of those 976 participants that completed the experiment, we were able to identify 39 high school students, around 4 Percent, who had

not applied for a job so far. Table 2.13, therefore, provides a comparison of the experimental decisions[44] for those high school students with and without an application.

Table 2.13: Transfer Decisions in the TPP/R Game among High School Students who previously applied or not

| Variable | High School Students (without application) | | High School Students (with application) | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|
| | Obs. | Mean | Obs. | Mean | | |
| **1. Trust** | | | | | | |
| Transfer as Player A | 39 | 55.13 | 937 | 52.61 | 2.51 | 0.627 |
| **2. Trustworthieness** | | | | | | |
| Backtransfer as Player B if A sent 50 (a) | 39 | 79.49 | 937 | 74.39 | 5.10 | 0.474 |
| Backtransfer as Player B if A sent 100 (b) | 39 | 169.23 | 937 | 149.63 | 19.60 | 0.165 |
| Backtransfer as Player B (joint (a)+(b)) | 39 | 248.72 | 937 | 224.01 | 24.71 | 0.181 |
| **3. Points transferred to A and B as C** | | | | | | |
| Transfer to A if A0B0 | | -5.64 | | -5.23 | 0.41 | 0.867 |
| Transfer to B if A0B0 | | 6.38 | | 4.19 | 2.20 | 0.462 |
| Transfer to A if A50B100 | | 5.06 | | 6.45 | 1.38 | 0.532 |
| Transfer to B if A50B100 | | 9.58 | | 9.30 | 0.27 | 0.724 |
| Transfer to A if A100B200 | 39 | 7.95 | 937 | 9.23 | 1.29 | 0.388 |
| Transfer to B if A100B200 | | 11.44 | | 11.72 | 0.28 | 0.649 |
| Transfer to A if A50B0 | | 27.46 | | 19.48 | 7.98 | 0.084* |
| Transfer to B if A50B0 | | -29.28 | | -35.21 | 5.93 | 0.152 |
| Transfer to A if A100B0 | | 33.72 | | 33.16 | 0.56 | 0.895 |
| Transfer to B if A100B0 | | -32.46 | | -35.36 | 2.90 | 0.476 |

Note: statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

We were not able to determine strong significant differences between the high school students with and without an application for a job. Not only did they reveal similar trust and trustworthiness levels, but their propensity to allocate points in the TPP/R games can also be considered as being identical. Thus, having submitted an application cannot be considered as explaining the differences we observed between those that applied for police duty and those that did not do so.

### 2.5.4 Trust and trustworthiness with respect to norm enforcement

Due to our experimental design, every participant with the role of a norm enforcer played the game in the role of the trustor and as well as in the role of the trustee. As the university students, police applicants and high school students first played in the role of the trustor. The trustor had an endowment of 100 EUR and had to decide how much of this endowment he wants to send to the trustee, 0 EUR, 50 EUR or 100 EUR. The transferred amount indicated their level of trust in this game. In the next step, all participants had to decide, in the role of

[44]Table 2.A.8 provides a detailed overview on the decisions and can be found in Appendix 2.A

the trustee, how much they wanted to back transfer, 0 EUR or 100 EUR if the trustor sent 50 EUR and 0 EUR or 200 EUR, if he sent 100 EUR. The sum of the amount back transferred indicated their level of trustworthiness. In the role of the norm enforcer they are valuing the actions of other players in situations that they they already experienced themselves. Therefore, we assume a link between their own investment decisions in the game and their decisions on norm enforcement. To analyze the effect of their own trust and trustworthiness decisions on their willingness to enforce norms, we ran a series of OLS regressions on the average total points spent as norm enforcer[45]. The results of the regressions are presented in Table 2.14. The first four models do not include any control variables, whereas we include additional controls in the last model.

Table 2.14: OLS Regression on the average points transferred as Norm Enforcer

| **Dependent Variable: Average Total Points** | **All** | | | | |
|---|---|---|---|---|---|
| Model | (1) | (2) | (3) | (4) | (5) |
| Police applicant | 6.114*** | 5.315*** | 5.265*** | 4.902*** | 3.528** |
| | (1.356) | (1.327) | (1.327) | (1.311) | (1.547) |
| Trust level | | 8.709*** | | 6.010*** | 5.954*** |
| | | (1.037) | | (1.085) | (1.100) |
| Trustworthieness level | | | 5.662*** | 4.405*** | 4.317*** |
| | | | (0.572) | (0.601) | (0.609) |
| Additional controls | No | No | No | No | Yes |
| Constant | 36.191*** | 18.300*** | 17.788*** | 9.527*** | 6.999 |
| | (0.802) | (2.198) | (1.984) | (2.447) | (8.297) |
| $R^2$ | 0.013 | 0.0617 | 0.0733 | 0.0936 | 0.0985 |
| Observations | 1606 | 1606 | 1606 | 1606 | 1554 |

Note: OLS regression; robust standard errors in parentheses; own trust level is a categorial variable representing own transfer as trustor; own trustworthieness level is a categorial variable representing cummulated transfers as trustee; additional controls include gender, age, log of income, born in citytype, educational level, academical background and migrational background; statistical significance is indicated as * p<0.10, ** p<0.05, *** p<0.01;

In the first model, we ran a robust OLS regression to determine the effect of being a police applicant on general willingness to provide points in the norm enforcement game. The finding confirmed our previous results. In the second specification, we included the trust level of the participants and found it to have a positive significant influence on the allocation behavior. Thus, while an increase of ones own trust leads to higher transfers, we still find police applicants provide more points than the control group. Furthermore, if we focus on the cumulative transfers in the role of the trustee, model (3), we find it also to has a positive influence on the average transfer willingness. Still, police applicants do provide significantly more points for

[45]More specifically, we take the average of total points spend in each case, A0B0, A50B100, A100B200, A50B0 and A100B0. We assume this to represent their general willingness to provide allocations on the enforcement of norms. The control group provided on average 36.19 points whereas the police applicants allocated 42.30. The $\Delta$ of 6.11 points, provided in Table 2.A.3a in Appendix 2.A, is significant at the 1 percent level (Mann-Whitney U-Test: p-value=0.000, two-tailed).

transfers than the control group. Finally, if we look at trust and trustworthiness level jointly specification (4), we find both to have a significant influence on the magnitude of the average total transfer[46]. Including control variables for personal characteristics gives the same results[47].

Anyhow, the effect of being a police applicant is not rendered insignificant by this, and thus controlling for an individual's decisions in the trust game confirms the findings in the previous sections.

### 2.5.5 Beliefs upon the enforcement of norms

While we confirmed the propensity of police applicants to enforce norms, a valid question might be whether this behavior is desired by the trustors and trustees. To analyze the expectation, we are interested in students' beliefs about norm enforcement. Table 2.A.9 in Appendix 2.A reports the averages of student's beliefs on the behavior of the norm enforcer. Before we asked them to state their beliefs, we explained them the situation, i.e. being supervised by a norm enforcer, as well as the action sets of the norm enforcer. They were also told that each point they expect the norm enforcer to send influences the respective player's payoffs by 2 EUR. Furthermore, we emphasized in two groups[48] that they are going to play with a real police applicant, whereas the other group was told that the norm enforcer was an absolute stranger. We asked them for each possible transfer combination of the trustor and the trustee (A0B0, A50B100, A100B200, A50B0 and A100B0) to state how many points they expect the norm enforcer to use for punishment and/or reward. Since a student played each role only once in the first stage of the experiment, the beliefs of each group are presented separately, by whether they played with a police applicant or not.

In both treatments subjects expect the norm enforcing person to use up points in every situation. The expected average transfer willingness, which is represented by the average of total points expected to be transferred as Player C in each situation, is significantly different from zero (each one-sample t-test: p-value=0.000, two-tailed). In total, subjects expect the norm enforcer to sacrifice some of their own payoff and they expect this the most from police applicants (Mann-Whitney U-Test: p-value=0.009, two-tailed). The question is: in which situation is this intervention from the norm enforcer desired the most? If we look at the expected points transferred of Player C, we observe that students' expectations indeed depend on the situation of the trustor and the trustee. First, in the case A0B0, where the trustor and the trustee face equal payoffs, but also an inefficiency that is caused by the trustor. All student groups in the police treatment, as well as in the control treatment, expect the norm

[46]We were aware of a possible correlation between own trust and trustworthiness level to be present. Indeed we find them to be significantly correlated at the 1 percent level with a correlation coefficient of 0.3548. However, regression diagnostics on the variance inflation factor contradict the presence of multicollinearity.

[47]None but one of the control variables had a significant influence on the average total transfer. We find, participants from households with an academical background to provide more points on average.

[48]One student group who played in the role of the trustor and one student group that played in the role of an trustee.

enforcer on average to punish the trustor by at least 11.42 points and reward the trustee by at least 6.53 points. Mann-Whitney U-Testindicates no difference between the student groups (p-value=0.299, two-tailed). Second, in the cases A50B100 andA100B200, where equality is still persistent but efficiency has risen, we observe that the students expect the norm enforcer to reward both the trustor and the trustee. In the case A50B100 (A100B200), they expect the norm enforcer to send at least 7.24 (10.10) points to the trustor and at least 10.98 (13.30) points to the trustee. Again the Mann-Whitney U-Testindicates no statistical significance between the groups. If we now, thirdly, look at the expected transfers in the cases A50B0 and A100B0, where the trustor raised the efficiency but has been cheated by the trustee, the beliefs change. The trustor is expected to be rewarded by the norm enforcer in the case of A50B0 (A100B0) with on average 17.21 (27.84) points in the police treatment and with 14.41 (23.54) points in the control treatment. The difference in the case of A50B0 is significant at the 5-percent level (Mann-Whitney U-Test: p-value=0.011, two-tailed) and in the case of A100B0 at the 1-percent level (Mann-Whitney U-Test: p-value=0.001, two-tailed). On the other hand, students expect the norm enforcer to punish the trustee for his selfishness: in the case of A50B0 (A100B0) by on average 25.74 (30.47) points in the police treatment and by, on average, 18.85 (24.39) points in the control treatment. The difference in expected transfers to the trustee in the case of A50B0 is significant at the 1 percent level (Mann-Whitney U-Test: p-value=0.000, two-tailed) as well in the case of A100B0 at the 1 percent level (Mann-Whitney U-Test: p-value=0.001, two-tailed). The pattern of students expectations reveals that they expect good behavior as well as disadvantages that were not their fault to be rewarded and bad behavior, in the sense of fraud or inefficiency, to be punished. Although this behavior is expected to be the same in both treatments, when equality is established, we observe that students expect stronger punishments and stronger rewards from the police applicants than from the control group, when the trustor deviated.

## 2.6 Conclusion

Policemen all over the world enjoy a high level of trust in their propensity to enforce the law and to provide help, when needed. We assume two possible reasons for this raised propensity. On the one hand, people believe that police officers are, per se, more willing to enforce norms and the decision to work in the police is due to self-selection of particular individuals. On the other hand, it could be that police officers are more willing to enforce norms at work as a consequence of a forming process in their training. The contribution of this paper is to analyze experimentally, whether police applicants differ from applicants for other professions with respect to their willingness to enforce norms. Our trust game, extended by a third party punishment/reward game, provides a useful tool for analyzing a social dilemma situation, in which norm enforcement is both desired and executed. In this context, we show to what extent

the valuation of others behavior influences enforcement decisions of a third party.

We present four main findings, that we find to be robust. First, we find our main subject groups, police applicants and high school students, provide effort in the role of norm enforcer. This effort is highest in situations, where selfishness was revealed by the person who needed to be trusted. Second, trusting other people is rewarded by a norm enforcer. A monetary disadvantage that happened through a lower trusting behavior lead to an allocation to the sufferer. Third, a trustworthy person is rewarded by the norm enforcer in our setting, whereas the revelation of selfishness lead to strong punishment. The results indicate that punishment is provided because of the observation of deviant behavior and not due to caused inequality. In all our results, we observe that police applicants reveal, overall, a higher willingness to transfer than people who apply for other jobs. The use of rewards for pro-social behavior and the use of punishment for deviant behavior seems, therefore, to be a powerful device for the valuation and treatment of players in a social dilemma. Fourth, we find evidence for the presence of a mixed-motive norm enforcer, who incorporates more altruism as well as more hostility towards other persons. We therefore contradict the theory of Prendergast (2007), in which only people with strong biases in one direction, altruism or hostility, gain additional utility from the employment and self-selection becomes bifurcated in these types.

Since police applicants select into a profession that deals with the valuation and enforcement of norms on a day-to-day basis, the results indicate that there is a self-selection of special people into the police profession. It seems that police officers enjoy people abiding by the law; police applicants approve of people in the experiment behaving in a trusting and trustworthy manner. Overall, in line with the theory of self-selection into the public sector (e.g. Besley and Ghatak, 2005; Delfgaauw and Dur, 2008; Francois and Vlassopoulos, 2008), our results suggest that police applicants are more willing to renounce a monetary benefit, given their preferences. They are willing to punish and to reward people interacting in a social dilemma situation, contradicting the assumption of strong one-directional bias. Therefore, it seems that motivation to work in the public sector is gained through assigning the correct treatment in the correct situation and by the provision of effort in doing so.

Nevertheless, the question of the impact of forming through the training process after hiring is still unanswered. In future work, we will focus on the effects on norm enforcement of training and learning on the job. Our online experiment allows us to repeat the enforcement game under the same conditions using other participant groups. Therefore, it might be interesting to compare how the enforcement of norms evolves over the career track of police officers to show that attracting the right kind of employees implies that they will provide higher effort on the job as well.

## 2.A Tables

Table 2.A.1a: Demographic, Social and Economic Background of Police Applicants and Control Group by Gender

| Variable | **Complete** | | | | | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Control Group** | | **Police Applicants** | | **Mann-Whitney Test** | Control Group | | Police Applicants | | Mann-Whitney Test | Control Group | | Police Applicants | | Mann-Whitney Test |
| | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | |
| **Personal characteristics:** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | 959 | 0.66 | 617 | 0.38 | 0.000*** | | | | | | | | | | |
| | | (.473) | | (.486) | | | | | | | | | | | |
| Age (years) | 959 | 19.63 | 617 | 21.07 | 0.000*** | 324 | 19.66 | 383 | 21.46 | 0.000*** | 635 | 19.50 | 234 | 20.43 | 0.303 |
| | | (2.466) | | (3.178) | | | (.935) | | (3.292) | | | (.83) | | (2.879) | |
| Height (in cm) | 959 | 172.41 | 617 | 175.91 | 0.000*** | 324 | 181.93 | 383 | 180.95 | 0.067* | 635 | 167.55 | 234 | 167.67 | 0.751 |
| | | (11.575) | | (10.46) | | | (6.682) | | (6.481) | | | (10.475) | | (10.515) | |
| Education (5 = Abitur) | 959 | 5.00 | 614 | 4.74 | 0.000*** | 324 | 5.00 | 381 | 4.71 | 0.000*** | 635 | 5.00 | 233 | 4.79 | 0.000*** |
| | | (.) | | (.462) | | | (.) | | (.478) | | | (.) | | (.432) | |
| Academic Backround (1 =yes) | 959 | 0.61 | 617 | 0.41 | 0.000*** | 324 | 0.63 | 383 | 0.40 | 0.000*** | 635 | 0.60 | 234 | 0.42 | 0.000*** |
| | | (.489) | | (.492) | | | (.484) | | (.491) | | | (.491) | | (.494) | |
| Income (in €) | 958 | 170.68 | 616 | 446.71 | 0.000*** | 324 | 181.67 | 383 | 482.61 | 0.000*** | 634 | 165.07 | 233 | 387.69 | 0.000*** |
| | | (285.585) | | (518.781) | | | (322.884) | | (553.958) | | | (264.601) | | (450.039) | |
| Grown up in citytype | 959 | 3.03 | 617 | 2.84 | 0.002*** | 324 | 2.98 | 383 | 2.79 | 0.026** | 635 | 3.06 | 234 | 2.92 | 0.231 |
| | | (.933) | | (1.079) | | | (.967) | | (1.081) | | | (.915) | | (1.074) | |
| Migrational backround (1 = yes) | 957 | 0.069 | 615 | 0.088 | 0.170 | 323 | 0.077 | 381 | 0.089 | 0.572 | 634 | 0.065 | 233 | 0.086 | 0.280 |
| | | (.254) | | (.283) | | | (.268) | | (.285) | | | (.246) | | (.281) | |

Note: Table reports no. of observations as well as variable means; standard errors in parenthesis; lowest educational type observed is 3 "Realschulabschluss" followed by 4 "Fachabitur" and 5 "Abitur"; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "big cities", 2 "middle sized cities", 3 "small towns" and 4 "rural areas"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

Table 2.A.1b: Demographic, Social and Economic Background of Police Applicants and Control Group (16-22 years and Abitur) by Gender

| Variable | **Complete** | | | | | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Control Group** | | **Police Applicants** | | **Mann-Whitney Test** | Control Group | | Police Applicants | | Mann-Whitney Test | Control Group | | Police Applicants | | Mann-Whitney Test |
| | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | |
| **Personal characteristics:** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | 953 | 0.66 | 388 | 0.42 | 0.000*** | | | | | | | | | | |
| | | (.473) | | (.494) | | | | | | | | | | | |
| Age (years) | 953 | 19.52 | 388 | 19.58 | 0.523 | 321 | 19.60 | 226 | 19.82 | 0.061* | 632 | 19.48 | 162 | 19.25 | 0.000*** |
| | | (.707) | | (1.214) | | | (.704) | | (1.236) | | | (.705) | | (1.104) | |
| Height (in cm) | 953 | 172.40 | 388 | 175.66 | 0.000*** | 321 | 181.94 | 226 | 181.32 | 0.388 | 632 | 167.56 | 162 | 167.77 | 0.258 |
| | | (11.585) | | (11.414) | | | (6.671) | | (6.305) | | | (10.496) | | (12.246) | |
| Academic Backround (1 =yes) | 953 | 0.61 | 388 | 0.41 | 0.000*** | 321 | 0.63 | 226 | 0.42 | 0.000*** | 632 | 0.60 | 162 | 0.41 | 0.000*** |
| | | (.488) | | (.493) | | | (.484) | | (.494) | | | (.491) | | (.493) | |
| Income (in €) | 952 | 167.39 | 388 | 294.01 | 0.000*** | 321 | 174.96 | 226 | 319.05 | 0.000*** | 631 | 163.54 | 162 | 259.07 | 0.000*** |
| | | (281.969) | | (327.92) | | | (315.592) | | (350.878) | | | (263.407) | | (290.368) | |
| Grown up in citytype | 953 | 3.04 | 388 | 2.85 | 0.012** | 321 | 2.99 | 226 | 2.80 | 0.062* | 632 | 3.06 | 162 | 2.92 | 0.257 |
| | | (.93) | | (1.083) | | | (.963) | | (1.093) | | | (.913) | | (1.069) | |
| Migrational backround (1 = yes) | 951 | 0.066 | 387 | 0.049 | 0.236 | 320 | 0.072 | 225 | 0.053 | 0.385 | 631 | 0.063 | 162 | 0.043 | 0.332 |
| | | (.249) | | (.216) | | | (.259) | | (.225) | | | (.244) | | (.204) | |

Note: Table reports no. of observations as well as variable means truncated for all participants between 16 and 22 years and with a current or soon completed educational level Abitur; standard errors in parenthesis; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "rural areas", 2 "small towns", 3 "middle sized cities" and 4 "big cities"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

Table 2.A.2: Demographic, Social and Economic Background of Police Applicants from Hessen and RLP

| Variable | **Complete** | | | | | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Police Applicants (Hessen) | | Police Applicants (Rheinland-Pfalz) | | **Mann-Whitney Test** | Police Applicants (Hessen) | | Police Applicants (Rheinland-Pfalz) | | Mann-Whitney Test | Police Applicants (Hessen) | | Police Applicants (Rheinland-Pfalz) | | Mann-Whitney Test |
| | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | |
| **Personal characteristics:** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | 324 | 0.31 | 293 | 0.46 | 0.000*** | | | | | | | | | | |
| | | (.463) | | (.499) | | | | | | | | | | | |
| Age (years) | 324 | 21.73 | 293 | 20.33 | 0.000*** | 224 | 21.85 | 159 | 20.91 | 0.000*** | 100 | 21.47 | 134 | 19.66 | 0.000*** |
| | | (3.189) | | (3.005) | | | (3.14) | | (3.429) | | | (3.298) | | (2.238) | |
| Height (in cm) | 324 | 176.71 | 293 | 175.03 | 0.009*** | 224 | 181.08 | 159 | 180.75 | 0.634 | 100 | 166.91 | 134 | 168.24 | 0.115 |
| | | (10.618) | | (10.228) | | | (6.386) | | (6.627) | | | (11.648) | | (9.589) | |
| Education (5 = Abitur) | 321 | 4.71 | 293 | 4.77 | 0.036 | 222 | 4.70 | 159 | 4.72 | 0.495 | 99 | 4.72 | 134 | 4.84 | 0.032** |
| | | (.463) | | (.46) | | | (.458) | | (.505) | | | (.475) | | (.392) | |
| Academic Backround (1 =yes) | 324 | 0.43 | 293 | 0.39 | 0.242 | 224 | 0.44 | 159 | 0.35 | 0.078* | 100 | 0.41 | 134 | 0.43 | 0.814 |
| | | (.496) | | (.488) | | | (.498) | | (.479) | | | (.494) | | (.496) | |
| Income (in €) | 323 | 462.81 | 293 | 428.96 | 0.051* | 224 | 479.06 | 159 | 487.60 | 0.240 | 99 | 426.03 | 134 | 359.37 | 0.315 |
| | | (509.047) | | (529.609) | | | (520.727) | | (599.31) | | | (482.114) | | (424.412) | |
| Grown up in citytype | 324 | 2.74 | 293 | 2.94 | 0.013** | 224 | 2.68 | 159 | 2.93 | 0.019** | 100 | 2.88 | 134 | 2.96 | 0.468 |
| | | (1.061) | | (1.092) | | | (1.068) | | (1.086) | | | (1.037) | | (1.103) | |
| Migrational backround (1 = yes) | 322 | 0.121 | 293 | 0.051 | 0.002*** | 222 | 0.126 | 159 | 0.038 | 0.003*** | 100 | 0.110 | 133 | 0.068 | 0.255 |
| | | (.327) | | (.221) | | | (.333) | | (.191) | | | (.314) | | (.252) | |

Note: Table reports no. of observations as well as variable means; standard errors in parenthesis; lowest educational type observed is 3 "Realschulabschluss" followed by 4 "Fachabitur" and 5 "Abitur"; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "big cities", 2 "middle sized cities", 3 "small towns" and 4 "rural areas"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

## Table 2.A.3a: Transfer Decisions in the TPP/R Game

| Variable | Control Group | | | | | Police Applicants | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Std.Dev | Min | Max | Obs. | Mean | Std.Dev | Min | Max | | |
| **1. Trust** | | | | | | | | | | | | |
| Transfer as Player A | 976 | 52.72 | (32.428) | 0 | 100 | 630 | 57.30 | (34.332) | 0 | 100 | 4.59 | 0.005*** |
| **2. Trustworthieness** | | | | | | | | | | | | |
| Backtransfer as Player B if A sent 50 (a) | 976 | 74.59 | (43.558) | 0 | 100 | 630 | 81.27 | (39.046) | 0 | 100 | 6.68 | 0.002*** |
| Backtransfer as Player B if A sent 100 (b) | 976 | 150.41 | (86.409) | 0 | 200 | 630 | 158.73 | (81.001) | 0 | 200 | 8.32 | 0.054* |
| Backtransfer as Player B (joint (a)+(b)) | 976 | 225.00 | (117.014) | 0 | 300 | 630 | 240.00 | (108.113) | 0 | 300 | 15.00 | 0.005*** |
| **3. Points transferred to A and B as C** | | | | | | | | | | | | |
| Transfer to A if A0B0 | 976 | -5.25 | (16.269) | -60 | 80 | 630 | -4.55 | (18.356) | -60 | 160 | 0.69 | 0.410 |
| Transfer to B if A0B0 | 976 | 4.28 | (11.615) | -100 | 160 | 630 | 5.53 | (13.363) | -50 | 160 | 1.26 | 0.048** |
| Transfer to A if A50B100 | 976 | 6.39 | (12.482) | -49 | 80 | 630 | 9.22 | (15.611) | -50 | 110 | 2.82 | 0.000*** |
| Transfer to B if A50B100 | 976 | 9.31 | (15.385) | -20 | 125 | 630 | 12.18 | (19.127) | -50 | 160 | 2.87 | 0.000*** |
| Transfer to A if A100B200 | 976 | 9.18 | (17.679) | -80 | 80 | 630 | 11.77 | (20.398) | -50 | 80 | 2.59 | 0.015** |
| Transfer to B if A100B200 | 976 | 11.70 | (20.850) | -80 | 100 | 630 | 13.59 | (23.962) | -80 | 110 | 1.88 | 0.265 |
| Transfer to A if A50B0 | 976 | 19.80 | (19.112) | -25 | 160 | 630 | 21.57 | (20.696) | -35 | 160 | 1.77 | 0.049** |
| Transfer to B if A50B0 | 976 | -34.98 | (32.991) | -125 | 80 | 630 | -40.94 | (34.002) | -125 | 60 | 5.97 | 0.000*** |
| Transfer to A if A100B0 | 976 | 33.18 | (27.809) | 0 | 160 | 630 | 39.10 | (32.301) | 0 | 160 | 5.91 | 0.000*** |
| Transfer to B if A100B0 | 976 | -35.25 | (38.683) | -160 | 160 | 630 | -39.18 | (39.999) | -160 | 160 | 3.93 | 0.032** |
| **4. Total points transferred as C** | | | | | | | | | | | | |
| Transfer if A0B0 | 976 | 15.49 | (20.040) | 0 | 160 | 630 | 17.51 | (23.120) | 0 | 160 | 2.02 | 0.215 |
| Transfer if A50B100 | 976 | 17.15 | (25.920) | 0 | 160 | 630 | 22.85 | (32.082) | 0 | 160 | 5.70 | 0.000*** |
| Transfer if A100B200 | 976 | 22.90 | (36.446) | 0 | 160 | 630 | 27.62 | (42.017) | 0 | 160 | 4.71 | 0.068* |
| Transfer if A50B0 | 976 | 55.83 | (37.187) | 0 | 160 | 630 | 63.91 | (37.737) | 0 | 160 | 8.09 | 0.000*** |
| Transfer if A100B0 | 976 | 69.59 | (47.067) | 0 | 160 | 630 | 79.58 | (48.876) | 0 | 160 | 9.99 | 0.000*** |
| **5. Average transfer willingnes of C** | 976 | 36.19 | (25.043) | 0 | 160 | 630 | 42.30 | (27.462) | 0 | 160 | 6.11 | 0.000*** |

Note: Table reports the transfer decisions of two study groups, control group and police applicants; since the observations for the police applicants were drawn from 2 different surveys, decisions from the other federal states were presented separately in Table 6a; first section indicates the average trust level as Player A; second section represents summary statistics the sum of trustworthiness as Player B; in order to sustain comparability, only observations that also occur in the TPP\R game are considered so far; the third section indicates the average transfers to players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section four aggregates total points spent when facing one of A's and B's decision; fifth section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations as well as minimum and maximum values are reported; additionally table reports a two-sample Mann-Whitney U-Test for the comparison of the distinct study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

Table 2.A.3b: Transfer Decisions in the TPP/R Game (16-22 years and Abitur)

| Variable | Control Group | | | | | Police Applicants | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Std.Dev | Min | Max | Obs. | Mean | Std.Dev | Min | Max | | |
| **1. Trust** | | | | | | | | | | | | |
| Transfer as Player A | 953 | 52.68 | (32.502) | 0 | 100 | 388 | 57.47 | (33.654) | 0 | 100 | 4.80 | 0.014** |
| **2. Trustworthieness** | | | | | | | | | | | | |
| Backtransfer as Player B if A sent 50 (a) | 953 | 74.50 | (43.608) | 0 | 100 | 388 | 81.70 | (38.716) | 0 | 100 | 7.20 | 0.005*** |
| Backtransfer as Player B if A sent 100 (b) | 953 | 149.42 | (86.979) | 0 | 200 | 388 | 162.37 | (78.266) | 0 | 200 | 12.95 | 0.011** |
| Backtransfer as Player B (joint (a)+(b)) | 953 | 223.92 | (117.728) | 0 | 300 | 388 | 244.07 | (105.365) | 0 | 300 | 20.15 | 0.002*** |
| **3. Points transferred to A and B as C** | | | | | | | | | | | | |
| Transfer to A if A0B0 | 953 | -5.25 | (16.359) | -60 | 80 | 388 | -5.04 | (19.034) | -60 | 160 | 0.22 | 0.857 |
| Transfer to B if A0B0 | 953 | 4.29 | (11.711) | -100 | 160 | 388 | 5.80 | (12.688) | -50 | 80 | 1.51 | 0.025** |
| Transfer to A if A50B100 | 953 | 6.40 | (12.522) | -49 | 80 | 388 | 8.94 | (14.680) | -30 | 110 | 2.54 | 0.000*** |
| Transfer to B if A50B100 | 953 | 9.35 | (15.475) | -20 | 125 | 388 | 12.25 | (18.817) | -40 | 160 | 2.90 | 0.000*** |
| Transfer to A if A100B200 | 953 | 9.16 | (17.719) | -80 | 80 | 388 | 11.45 | (18.660) | -40 | 80 | 2.29 | 0.006*** |
| Transfer to B if A100B200 | 953 | 11.68 | (20.918) | -80 | 100 | 388 | 13.19 | (22.672) | -80 | 110 | 1.51 | 0.118 |
| Transfer to A if A50B0 | 953 | 19.66 | (18.991) | -25 | 160 | 388 | 21.11 | (19.943) | -35 | 160 | 1.45 | 0.121 |
| Transfer to B if A50B0 | 953 | -35.07 | (33.006) | -125 | 80 | 388 | -39.34 | (33.526) | -125 | 60 | 4.27 | 0.014** |
| Transfer to A if A100B0 | 953 | 33.29 | (27.990) | 0 | 160 | 388 | 37.04 | (29.320) | 0 | 160 | 3.75 | 0.017** |
| Transfer to B if A100B0 | 953 | -35.22 | (38.732) | -160 | 160 | 388 | -37.43 | (38.919) | -160 | 160 | 2.22 | 0.157 |
| **4. Total points transferred as C** | | | | | | | | | | | | |
| Transfer if A0B0 | 953 | 15.59 | (20.175) | 0 | 160 | 388 | 18.28 | (23.149) | 0 | 160 | 2.69 | 0.086* |
| Transfer if A50B100 | 953 | 17.22 | (26.018) | 0 | 160 | 388 | 22.54 | (30.222) | 0 | 160 | 5.32 | 0.000*** |
| Transfer if A100B200 | 953 | 22.91 | (36.519) | 0 | 160 | 388 | 26.19 | (39.346) | 0 | 160 | 3.29 | 0.066* |
| Transfer if A50B0 | 953 | 55.80 | (37.166) | 0 | 160 | 388 | 62.06 | (36.594) | 0 | 160 | 6.26 | 0.004*** |
| Transfer if A100B0 | 953 | 69.70 | (47.163) | 0 | 160 | 388 | 76.08 | (46.913) | 0 | 160 | 6.38 | 0.009*** |
| **5. Average transfer willingnes of C** | 953 | 36.25 | (25.105) | 0 | 160 | 388 | 41.03 | (26.592) | 0 | 160 | 4.79 | 0.002*** |

Note: Table reports the transfer decisions of two study groups, control group and police applicants between 16-22 years and with current or soon completed educational level Abitur; since the observations for the police applicants were drawn from 2 different surveys, decisions from the other federal states were presented separately in Table 6a; first section indicates the average trust level as Player A; second section represents summary statistics the sum of trustworthiness as Player B; in order to sustain comparability, only observations that also occur in the TPP\R game are considered so far; the third section indicates the average transfers to players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section four aggregates total points spent when facing one of A's and B's decision; fifth section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations as well as minimum and maximum values are reported; additionally table reports a two-sample Mann-Whitney U-Test for the comparison of the distinct study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

# Table 2.A.4: Transfer Decisions in the TPP/R Game by Gender

| | Male | | | | | | | | Female | | | | | | | | Gender Comparison | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Control Group | | | Police Applicants | | | Δ | Mann-Whitney Test | Control Group | | | Police Applicants | | | Δ | Mann-Whitney Test | Control Group Mann-Whitney Test | Police Applicants Mann-Whitney Test |
| Variable | Obs. | Mean | Std.Dev | Obs. | Mean | Std.Dev | | | Obs. | Mean | Std.Dev | Obs. | Mean | Std.Dev | | | | |
| **1. Trust** | | | | | | | | | | | | | | | | | | |
| Transfer as Player A | 324 | 56.173 | (33.508) | 383 | 57.050 | (35.113) | 0.88 | 0.678 | 635 | 51.024 | (31.818) | 234 | 57.692 | (32.503) | 6.67 | 0.006*** | 0.018** | 0.912 |
| **2. Trustworthieness** | | | | | | | | | | | | | | | | | | |
| Backtransfer as Player B | 324 | 211.728 | (124.112) | 383 | 231.593 | (114.267) | 19.86 | 0.018** | 635 | 230.709 | (113.527) | 234 | 254.274 | (94.500) | 23.56 | 0.008*** | 0.030** | 0.038** |
| **3. Points transferred to A and B as C** | | | | | | | | | | | | | | | | | | |
| Transfer to A if A0B0 | 324 | -4.321 | (17.282) | 383 | -4.473 | (17.135) | 0.15 | 0.994 | 635 | -5.751 | (15.805) | 234 | -4.620 | (20.086) | 1.13 | 0.620 | 0.155 | 0.502 |
| Transfer to B if A0B0 | 324 | 5.414 | (14.673) | 383 | 5.841 | (12.026) | 0.43 | 0.679 | 635 | 3.694 | (09.768) | 234 | 4.483 | (11.534) | 0.79 | 0.217 | 0.022** | 0.267 |
| Transfer to A if A50B100 | 324 | 7.427 | (14.652) | 383 | 9.262 | (15.209) | 1.83 | 0.036** | 635 | 5.866 | (11.201) | 234 | 9.288 | (15.473) | 3.42 | 0.003*** | 0.547 | 0.732 |
| Transfer to B if A50B100 | 324 | 9.903 | (17.271) | 383 | 11.873 | (18.774) | 1.97 | 0.040** | 635 | 9.077 | (14.414) | 234 | 12.808 | (19.027) | 3.73 | 0.007*** | 0.838 | 0.439 |
| Transfer to A if A100B200 | 324 | 9.284 | (19.259) | 383 | 11.480 | (20.477) | 2.20 | 0.156 | 635 | 9.102 | (16.823) | 234 | 12.372 | (19.194) | 3.27 | 0.001** | 0.600 | 0.142 |
| Transfer to B if A100B200 | 324 | 11.586 | (21.143) | 383 | 12.587 | (23.244) | 1.00 | 0.815 | 635 | 11.773 | (20.758) | 234 | 15.299 | (24.359) | 3.53 | 0.049** | 0.739 | 0.066* |
| Transfer to A if A50B0 | 324 | 19.367 | (20.753) | 383 | 20.112 | (18.991) | 0.74 | 0.215 | 635 | 19.748 | (17.973) | 234 | 23.415 | (21.566) | 3.67 | 0.028** | 0.351 | 0.111 |
| Transfer to B if A50B0 | 324 | -35.586 | (34.288) | 383 | -40.877 | (35.495) | 5.29 | 0.029** | 635 | -34.934 | (32.446) | 234 | -40.440 | (31.235) | 5.51 | 0.007*** | 0.838 | 0.798 |
| Transfer to A if A100B0 | 324 | 33.120 | (29.384) | 383 | 37.781 | (32.177) | 4.66 | 0.047** | 635 | 33.345 | (27.158) | 234 | 40.919 | (31.237) | 7.57 | 0.001*** | 0.716 | 0.178 |
| Transfer to B if A100B0 | 324 | -35.910 | (43.078) | 383 | -38.590 | (42.423) | 2.68 | 0.256 | 635 | -35.000 | (36.323) | 234 | -38.833 | (34.107) | 3.83 | 0.043** | 0.534 | 0.299 |
| **4. Total points transferred as C** | | | | | | | | | | | | | | | | | | |
| Transfer if A0B0 | 324 | 17.265 | (22.870) | 383 | 16.992 | (22.570) | 0.27 | 0.978 | 635 | 14.690 | (18.537) | 234 | 17.462 | (22.280) | 2.77 | 0.231 | 0.421 | 0.662 |
| Transfer if A50B100 | 324 | 18.836 | (29.870) | 383 | 22.024 | (31.553) | 3.19 | 0.049** | 635 | 16.389 | (23.678) | 234 | 23.694 | (31.845) | 7.31 | 0.002*** | 0.824 | 0.422 |
| Transfer if A100B200 | 324 | 23.401 | (38.030) | 383 | 26.496 | (41.477) | 3.09 | 0.400 | 635 | 22.683 | (35.626) | 234 | 28.611 | (41.726) | 5.93 | 0.037** | 0.562 | 0.100 |
| Transfer if A50B0 | 324 | 55.731 | (38.250) | 383 | 62.556 | (38.980) | 6.82 | 0.012** | 635 | 55.898 | (36.641) | 234 | 65.111 | (35.197) | 9.21 | 0.001*** | 0.835 | 0.487 |
| Transfer if A100B0 | 324 | 70.951 | (49.381) | 383 | 78.047 | (51.030) | 7.10 | 0.046** | 635 | 69.151 | (45.869) | 234 | 80.530 | (44.171) | 11.38 | 0.000*** | 0.634 | 0.467 |
| **5. Average transfer willingnes of** | 324 | 37.237 | (27.093) | 383 | 41.223 | (27.549) | 3.99 | 0.036** | 635 | 35.762 | (23.960) | 234 | 43.082 | (26.264) | 7.32 | 0.000*** | 0.628 | 0.457 |

Note: Table reports the transfer decisions of two study groups control group and police applicants for males and females; first section indicates the average trust level as Player A; second section represents summary statistics the sum of trustworthiness as Player B; in order to sustain comparability, only observations that also occur in the TPP\R game are considered so far; the third section indicates the average transfers to Players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section four aggregates total points spent when facing one of A's and B's decision; fifth section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations as well as minimum and maximum values are reported; additionally table reports a two-sample Mann-Whitney U-Test for the comparison of the distinct study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

Table 2.A.5a: Correlation of Transfer Decisions

| | Control Group (N=976) | | | | | | Police Applicants (N=630) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Points | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| | A0B0 | 1.000 | | | | | A0B0 | 1.000 | | | | |
| | A50B100 | 0.398*** | 1.000 | | | | A50B100 | 0.401*** | 1.000 | | | |
| | A100B200 | 0.326*** | 0.738*** | 1.000 | | | A100B200 | 0.312*** | 0.770*** | 1.000 | | |
| | A50B0 | 0.358*** | 0.349*** | 0.314*** | 1.000 | | A50B0 | 0.330*** | 0.369*** | 0.317*** | 1.000 | |
| | A100B0 | 0.275*** | 0.403*** | 0.411*** | 0.693*** | 1.000 | A100B0 | 0.272*** | 0.398*** | 0.416*** | 0.647*** | 1.000 |
| Transfer to A | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| | A0B0 | 1.000 | | | | | A0B0 | 1.000 | | | | |
| | A50B100 | -0.118*** | 1.000 | | | | A50B100 | -0.045 | 1.000 | | | |
| | A100B200 | -0.237*** | 0.587*** | 1.000 | | | A100B200 | -0.155*** | 0.738*** | 1.000 | | |
| | A50B0 | 0.081** | 0.361*** | 0.329*** | 1.000 | | A50B0 | 0.155*** | 0.446*** | 0.292*** | 1.000 | |
| | A100B0 | -0.007 | 0.280*** | 0.299*** | 0.531*** | 1.000 | A100B0 | 0.047 | 0.341*** | 0.326*** | 0.557*** | 1.000 |
| Transfer to B | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| | A0B0 | 1.000 | | | | | A0B0 | 1.000 | | | | |
| | A50B100 | 0.206*** | 1.000 | | | | A50B100 | 0.159*** | 1.000 | | | |
| | A100B200 | 0.096*** | 0.746*** | 1.000 | | | A100B200 | 0.088** | 0.717*** | 1.000 | | |
| | A50B0 | 0.056* | -0.148*** | -0.103*** | 1.000 | | A50B0 | 0.0713* | -0.122*** | -0.124*** | 1.000 | |
| | A100B0 | 0.104*** | -0.212*** | -0.222*** | 0.515*** | 1.000 | A100B0 | 0.038 | -0.169*** | -0.172*** | 0.430*** | 1.000 |

Table 2.A.5b: Correlation of Transfer Decisions (16-22 years and Abitur)

| | Control Group (N=953) | | | | | | Police Applicants (N=388) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Points | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| | A0B0 | 1.000 | | | | | A0B0 | 1.000 | | | | |
| | A50B100 | 0.400*** | 1.000 | | | | A50B100 | 0.410*** | 1.000 | | | |
| | A100B200 | 0.329*** | 0.739*** | 1.000 | | | A100B200 | 0.297*** | 0.732*** | 1.000 | | |
| | A50B0 | 0.364*** | 0.347*** | 0.309*** | 1.000 | | A50B0 | 0.373*** | 0.376*** | 0.308*** | 1.000 | |
| | A100B0 | 0.274*** | 0.403*** | 0.415*** | 0.693*** | 1.000 | A100B0 | 0.331*** | 0.431*** | 0.457*** | 0.673*** | 1.000 |
| Transfer to A | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| | A0B0 | 1.000 | | | | | A0B0 | 1.000 | | | | |
| | A50B100 | -0.118*** | 1.000 | | | | A50B100 | 0.001 | 1.000 | | | |
| | A100B200 | -0.239*** | 0.586*** | 1.000 | | | A100B200 | -0.120** | 0.680*** | 1.000 | | |
| | A50B0 | 0.080** | 0.365*** | 0.323*** | 1.000 | | A50B0 | 0.195*** | 0.450*** | 0.287*** | 1.000 | |
| | A100B0 | -0.010 | 0.285*** | 0.307*** | 0.540*** | 1.000 | A100B0 | 0.075 | 0.351*** | 0.385*** | 0.578*** | 1.000 |
| Transfer to B | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| | A0B0 | 1.000 | | | | | A0B0 | 1.000 | | | | |
| | A50B100 | 0.205*** | 1.000 | | | | A50B100 | 0.089* | 1.000 | | | |
| | A100B200 | 0.096*** | 0.747*** | 1.000 | | | A100B200 | 0.019 | 0.646*** | 1.000 | | |
| | A50B0 | 0.059* | -0.143*** | -0.100*** | 1.000 | | A50B0 | 0.024 | -0.166*** | -0.129** | 1.000 | |
| | A100B0 | 0.110*** | -0.207*** | -0.219*** | 0.507*** | 1.000 | A100B0 | -0.009 | -0.223*** | -0.193*** | 0.450*** | 1.000 |

# Table 2.A.6a: OLS and SUR Regression of points transferred to the trustor in the TPP/R Game

| **Dependent Variable: Transfer to A in the case** | **A0B0** | | | **A50B100** | | | **A100B200** | | | **A50B0** | | | **A100B0** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) |
| **Dummy Variable for beeing a Police Applicant** | 0.694 | 0.454 | 0.454 | 2.825*** | 1.790** | 1.790** | 2.591*** | 2.479** | 2.479** | 1.774* | 2.015* | 2.015* | 5.914*** | 5.018*** | 5.018*** |
| | (0.898) | (1.150) | (1.062) | (0.739) | (0.872) | (0.850) | (0.990) | (1.118) | (1.115) | (1.027) | (1.215) | (1.200) | (1.565) | (1.758) | (1.826) |
| **Control Variables** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | | -0.873 | -0.873 | | -0.854 | -0.854 | | 0.425 | 0.425 | | 1.630 | 1.630 | | 2.108 | 2.108 |
| | | (0.944) | (0.913) | | (0.778) | (0.731) | | (1.020) | (0.991) | | (1.076) | (1.032) | | (1.596) | (1.570) |
| Age (years) | | -0.005 | -0.005 | | -0.120 | -0.120 | | 0.079 | 0.079 | | -0.426* | -0.426* | | 0.404 | 0.404 |
| | | (0.232) | (0.242) | | (0.213) | (0.194) | | (0.338) | (0.264) | | (0.273) | (0.274) | | (0.536) | (0.417) |
| Log of Income | | -1.246** | -1.246** | | 0.414 | 0.414 | | -0.011 | -0.011 | | 0.275 | 0.275 | | 0.062 | 0.062 |
| | | (0.522) | (0.515) | | (0.428) | (0.412) | | (0.589) | (0.558) | | (0.593) | (0.581) | | (0.938) | (0.885) |
| Grown up in citytype | | -0.429 | -0.429 | | 0.138 | 0.138 | | 0.592 | 0.592 | | 0.533 | 0.533 | | -0.053 | -0.053 |
| | | (0.478) | (0.450) | | (0.378) | (0.360) | | (0.487) | (0.489) | | (0.518) | (0.509) | | (0.812) | (0.774) |
| Educational level: Fachhochschulreife | | 2.849* | 2.849* | | 2.806* | 2.806** | | 1.070 | 1.070 | | 4.112** | 4.112** | | 6.605* | 6.605** |
| | | (1.663) | (1.692) | | (1.637) | (1.354) | | (2.149) | (1.837) | | (2.071) | (1.912) | | (3.486) | (2.909) |
| Educational level: Realschule | | 8.799** | 8.799** | | 13.553 | 13.553** | | 17.519 | 17.519** | | 14.069 | 14.069* | | -20.647*** | -20.647* |
| | | (3.606) | (7.142) | | (11.410) | (5.713) | | (12.951) | (7.752) | | (10.173) | (8.070) | | (7.833) | (12.279) |
| Academic Bacground | | -1.268 | -1.268 | | 0.759 | 0.759 | | 1.616* | 1.616* | | 2.016** | 2.016** | | 4.041*** | 4.041*** |
| | | (0.880) | (0.895) | | (0.704) | (0.716) | | (0.978) | (0.971) | | (1.007) | (1.011) | | (1.544) | (1.538) |
| Migrational Backround | | -0.599 | -0.599 | | 0.361 | 0.361 | | 2.981 | 2.981 | | -1.616 | -1.616 | | 1.013 | 1.013 |
| | | (1.660) | (1.680) | | (1.388) | (1.344) | | (2.183) | (1.823) | | (1.832) | (1.898) | | (3.420) | (2.888) |
| Constant | -5.248*** | 3.510 | 3.510 | 6.392*** | 6.460 | 6.460* | 9.182*** | 4.443 | 4.443 | 19.800*** | 22.920*** | 22.920*** | 33.181*** | 21.391** | 21.391** |
| | (0.521) | (4.810) | (4.837) | (0.400) | (4.190) | (3.869) | (0.566) | (6.574) | (5.250) | (0.612) | (5.349) | (5.466) | (0.890) | (10.079) | (8.316) |
| $R^2$ | 0.000 | 0.009 | 0.009 | 0.010 | 0.019 | 0.019 | 0.005 | 0.012 | 0.012 | 0.002 | 0.013 | 0.013 | 0.009 | 0.021 | 0.021 |
| Observations | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | | | | | | |
| Correlation of residuals with transfer to B | | | 0.145 | | | 0.741 | | | 0.875 | | | 0.031 | | | -0.002 |
| Breush-Pagan Test: $chi^2(1)$ | | | 0.000*** | | | 0.000*** | | | 0.000*** | | | 0.222 | | | 0.940 |

Note: Specifications (1) and (2): OLS regression with robust standard errors in parentheses; specification (3): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to B; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

Table 2.A.6b: OLS and SUR Regression of points transferred to the trustor in the TPP/R Game (16-22 years and Abitur)

| **Dependent Variable: Transfer to A in the case** | **A0B0** | | | **A50B100** | | | **A100B200** | | | **A50B0** | | | **A100B0** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) |
| **Dummy Variable for beeing a Police Applicant** | 0.218 | 0.124 | 0.124 | 2.542*** | 2.439*** | 2.439*** | 2.290** | 3.008** | 3.008** | 1.452 | 2.128* | 2.128* | 3.746** | 4.913*** | 4.913*** |
| | (1.102) | (1.217) | (1.122) | (0.848) | (0.920) | (0.864) | (1.107) | (1.193) | (1.175) | (1.184) | (1.266) | (1.256) | (1.742) | (1.824) | (1.848) |
| **Control Variables** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | | -0.613 | -0.613 | | -0.989 | -0.989 | | 0.080 | 0.080 | | 1.367 | 1.367 | | 1.065 | 1.065 |
| | | (1.013) | (0.995) | | (0.800) | (0.766) | | (1.063) | (1.042) | | (1.152) | (1.114) | | (1.642) | (1.639) |
| Age (years) | | -0.254 | -0.254 | | 0.408 | 0.408 | | 0.337 | 0.337 | | -0.407 | -0.407 | | 0.695 | 0.695 |
| | | (0.607) | (0.557) | | (0.457) | (0.429) | | (0.613) | (0.583) | | (0.637) | (0.624) | | (0.921) | (0.918) |
| Log of Income | | -1.042* | -1.042* | | 0.182 | 0.182 | | -0.185 | -0.185 | | 0.178 | 0.178 | | 0.056 | 0.056 |
| | | (0.576) | (0.559) | | (0.454) | (0.431) | | (0.610) | (0.585) | | (0.649) | (0.626) | | (0.988) | (0.921) |
| Grown up in citytype | | -0.364 | -0.364 | | 0.266 | 0.266 | | 0.808 | 0.808 | | 0.278 | 0.278 | | 0.184 | 0.184 |
| | | (0.541) | (0.496) | | (0.394) | (0.382) | | (0.512) | (0.520) | | (0.576) | (0.556) | | (0.852) | (0.818) |
| Academic Bacground | | -1.587* | -1.587* | | 1.056 | 1.056 | | 2.141** | 2.141** | | 2.110* | 2.110* | | 4.463*** | 4.463*** |
| | | (0.955) | (0.976) | | (0.738) | (0.752) | | (1.025) | (1.022) | | (1.078) | (1.093) | | (1.601) | (1.608) |
| Migrational Backround | | -1.386 | -1.386 | | 0.438 | 0.438 | | 3.555 | 3.555* | | -1.815 | -1.815 | | 2.642 | 2.642 |
| | | (1.995) | (1.986) | | (1.657) | (1.530) | | (2.428) | (2.080) | | (2.038) | (2.225) | | (3.785) | (3.273) |
| Constant | -5.254*** | 7.290 | 7.290 | 6.397*** | -3.214 | -3.214 | 9.159*** | -0.552 | -0.552 | 19.661*** | 23.936* | 23.936* | 33.295*** | 15.372 | 15.372 |
| | (0.530) | (12.283) | (10.981) | (0.406) | (9.048) | (8.460) | (0.574) | (11.817) | (11.502) | (0.615) | (12.475) | (12.302) | (0.907) | (17.402) | (18.097) |
| $R^2$ | 0.000 | 0.006 | 0.006 | 0.008 | 0.012 | 0.012 | 0.003 | 0.010 | 0.010 | 0.001 | 0.006 | 0.006 | 0.004 | 0.010 | 0.010 |
| Observations | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | | | | | | |
| Correlation of residuals with transfer to B | | | 0.116 | | | 0.703 | | | 0.869 | | | 0.034 | | | -0.019 |
| Breush-Pagan Test: $chi^2(1)$ | | | 0.000 | | | 0.000 | | | 0.000 | | | 0.213 | | | 0.496 |

Note: Specifications (1) and (2): OLS regression with robust standard errors in parentheses; specification (3): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to B; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

# Table 2.A.7a: OLS and SUR Regression of points transferred to the trustee in the TPP/R Game

| **Dependent Variable: Transfer to B in the case** | **A0B0** | | | **A50B100** | | | **A100B200** | | | **A50B0** | | | **A100B0** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) |
| **Dummy Variable for beeing a Police Applicant** | 1.257* | 1.219 | 1.219* | 2.870*** | 2.412** | 2.412** | 1.884 | 2.003 | 2.003 | -5.965*** | -4.940** | -4.940** | -3.932* | -4.882** | -4.882** |
| | (0.649) | (0.774) | (0.731) | (0.907) | (1.071) | (1.048) | (1.165) | (1.344) | (1.361) | (1.718) | (2.065) | (2.065) | (2.018) | (2.435) | (2.416) |
| **Control Variables** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | | -1.784*** | -1.784*** | | -0.122 | -0.122 | | 1.465 | 1.465 | | 0.374 | 0.374 | | 0.152 | 0.152 |
| | | (0.681) | (0.913) | | (0.942) | (0.901) | | (1.188) | (1.170) | | (1.773) | (1.776) | | (2.099) | (2.077) |
| Age (years) | | -0.265* | -0.265 | | -0.337 | -0.337 | | 0.070 | 0.070 | | -0.383 | -0.383 | | -0.349 | -0.349 |
| | | (0.150) | (0.242) | | (0.240) | (0.239) | | (0.379) | (0.311) | | (0.510) | (0.471) | | (0.605) | (0.551) |
| Log of Income | | -0.058 | -0.058 | | 0.698 | 0.698 | | -0.077 | -0.077 | | 0.373 | 0.373 | | 0.796 | 0.796 |
| | | (0.389) | (0.515) | | (0.516) | (0.577) | | (0.678) | (0.659) | | (1.066) | (1.000) | | (1.254) | (1.170) |
| Grown up in citytype | | 0.265 | 0.265 | | 0.392 | 0.392 | | 0.620 | 0.620 | | 0.158 | 0.158 | | -2.492** | -2.492** |
| | | (0.344) | (0.450) | | (0.438) | (0.444) | | (0.601) | (0.577) | | (0.888) | (0.875) | | (1.062) | (1.024) |
| Educational level: Fachhochschulreife | | -0.230 | -0.230 | | 2.155 | 2.155 | | 2.256 | 2.256 | | -3.496 | -3.496 | | -0.044 | -0.044 |
| | | (1.053) | (1.692) | | (1.941) | (1.670) | | (2.472) | (2.168) | | (3.368) | (3.290) | | (3.864) | (3.848) |
| Educational level: Realschule | | 0.378 | 0.378 | | 13.099 | 13.099* | | 16.431 | 16.431* | | -0.767 | -0.767 | | -15.002 | -15.002 |
| | | (2.392) | (7.142) | | (11.206) | (7.047) | | (12.833) | (9.149) | | (12.190) | (13.885) | | (21.768) | (16.241) |
| Academic Bacground | | 0.471 | 0.471 | | 1.486* | 1.486* | | 2.894** | 2.894** | | -3.861** | -3.861** | | -6.140*** | -6.140*** |
| | | (0.646) | (0.895) | | (0.877) | (0.883) | | (1.158) | (1.146) | | (1.721) | (1.740) | | (2.056) | (2.035) |
| Migrational Backround | | -1.023 | -1.023 | | 1.690 | 1.690 | | 4.036 | 4.036* | | -4.862 | -4.862 | | -7.694* | -7.694** |
| | | (0.932) | (1.680) | | (1.881) | (1.658) | | (2.522) | (2.152) | | (3.585) | (3.266) | | (4.324) | (3.820) |
| Constant | 4.277*** | 9.909*** | 9.909*** | 9.313*** | 10.540** | 10.540** | 11.705*** | 5.877 | 5.877 | -34.977*** | -27.368*** | -27.368*** | -35.246*** | -20.518* | -20.518* |
| | (0.372) | (3.152) | (4.837) | (0.493) | (4.745) | (4.773) | (0.667) | (7.596) | (6.196) | (1.056) | (9.739) | (9.404) | (1.238) | (12.088) | (10.999) |
| $R^2$ | 0.002 | 0.011 | 0.011 | 0.007 | 0.013 | 0.013 | 0.002 | 0.012 | 0.012 | 0.008 | 0.013 | 0.013 | 0.002 | 0.013 | 0.013 |
| Observations | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 | 1606 | 1554 | 1554 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | | | | | | |
| Correlation of residuals with transfer to A | | | 0.145 | | | 0.741 | | | 0.875 | | | 0.031 | | | -0.002 |
| Breush-Pagan Test: $chi^2(1)$ | | | 0.000*** | | | 0.000*** | | | 0.000*** | | | 0.222 | | | 0.940 |

Note: Specifications (1) and (2): OLS regression with robust standard errors in parentheses; specification (3): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to A; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

Table 2.A.7b: OLS and SUR Regression of points transferred to the trustee in the TPP/R Game (16-22 years and Abitur)

| **Dependent Variable: Transfer to B in the case** | **A0B0** | | | **A50B100** | | | **A100B200** | | | **A50B0** | | | **A100B0** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) | (1 OLS) | (2 OLS) | (3 SUR) |
| **Dummy Variable for beeing a Police Applicant** | 1.513** | 1.267 | 1.267 | 2.901*** | 3.181*** | 3.181*** | 1.509 | 2.885** | 2.885** | -4.274** | -5.391** | -5.391** | -2.218 | -5.096** | -5.096** |
| | (0.747) | (0.843) | (0.786) | (1.078) | (1.132) | (1.079) | (1.335) | (1.425) | (1.397) | (2.009) | (2.167) | (2.155) | (2.340) | (2.582) | (2.525) |
| **Control Variables** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | | -1.412* | -1.412** | | -0.333 | -0.333 | | 0.979 | 0.979 | | 0.645 | 0.645 | | -0.642 | -0.642 |
| | | (0.750) | (0.697) | | (0.986) | (0.957) | | (1.236) | (1.239) | | (1.905) | (1.911) | | (2.317) | (2.239) |
| Age (years) | | -0.184 | -0.184 | | -0.362 | -0.362 | | 0.021 | 0.021 | | -1.523 | -1.523 | | -0.295 | -0.295 |
| | | (0.392) | (0.391) | | (0.543) | (0.536) | | (0.750) | (0.694) | | (1.043) | (1.070) | | (1.224) | (1.254) |
| Log of Income | | 0.075 | 0.075 | | 0.472 | 0.472 | | -0.419 | -0.419 | | 0.248 | 0.248 | | 1.298 | 1.298 |
| | | (0.444) | (0.392) | | (0.551) | (0.538) | | (0.712) | (0.696) | | (1.162) | (1.074) | | (1.362) | (1.258) |
| Grown up in citytype | | 0.400 | 0.400 | | 0.577 | 0.577 | | 0.859 | 0.859 | | -0.095 | -0.095 | | -2.446** | -2.446** |
| | | (0.397) | (0.348) | | (0.467) | (0.477) | | (0.648) | (0.618) | | (0.973) | (0.953) | | (1.172) | (1.117) |
| Academic Bacground | | 0.315 | 0.315 | | 2.179** | 2.179** | | 3.562*** | 3.562*** | | -4.502** | -4.502** | | -7.152*** | -7.152*** |
| | | (0.722) | (0.684) | | (0.934) | (0.939) | | (1.216) | (1.215) | | (1.850) | (1.874) | | (2.224) | (2.197) |
| Migrational Backround | | -0.444 | -0.444 | | 2.421 | 2.421 | | 4.777* | 4.777* | | -6.195 | -6.195 | | -4.504 | -4.504 |
| | | (1.123) | (1.393) | | (2.274) | (1.911) | | (2.777) | (2.474) | | (4.157) | (3.816) | | (4.687) | (4.472) |
| Constant | 4.287*** | 7.099 | 7.099 | 9.347*** | 11.192 | 11.192 | 11.684*** | 7.564 | 7.564 | -35.069*** | -3.375 | -3.375 | -35.215*** | -23.058 | -23.058 |
| | (0.379) | (7.889) | (7.700) | (0.501) | (10.690) | (10.566) | (0.678) | (14.846) | (13.679) | (1.069) | (20.520) | (21.096) | (1.255) | (24.268) | (24.726) |
| $R^2$ | 0.003 | 0.008 | 0.008 | 0.006 | 0.013 | 0.013 | 0.001 | 0.011 | 0.011 | 0.003 | 0.012 | 0.012 | 0.001 | 0.012 | 0.012 |
| Observations | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 | 1341 | 1325 | 1325 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | | | | | | |
| Correlation of residuals with transfer to A | | | 0.116 | | | 0.703 | | | 0.869 | | | 0.034 | | | -0.019 |
| Breush-Pagan Test: $chi^2(1)$ | | | 0.000 | | | 0.000 | | | 0.000 | | | 0.213 | | | 0.496 |

Note: Specifications (1) and (2): OLS regression with robust standard errors in parentheses; specification (3): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to A; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

Table 2.A.8: Transfer Decisions in the TPP/R Game among High School Students who previously applied or not

| Variable | High School Students (without application) | | | | | High School Students (with application) | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Std.Dev | Min | Max | Obs. | Mean | Std.Dev | Min | Max | | |
| **1. Trust** | | | | | | | | | | | | |
| Transfer as Player A | 39 | 55.13 | (34.018) | 0 | 100 | 937 | 52.61 | (32.376) | 0 | 100 | 2.51 | 0.627 |
| **2. Trustworthieness** | | | | | | | | | | | | |
| Backtransfer as Player B | 39 | 248.72 | (104.810) | 0 | 300 | 937 | 224.01 | (117.441) | 0 | 300 | 24.71 | 0.181 |
| **3. Points transferred to A and B as C** | | | | | | | | | | | | |
| Transfer to A if A0B0 | 39 | -5.64 | (15.902) | -50 | 30 | 937 | -5.23 | (16.292) | -60 | 80 | 0.41 | 0.867 |
| Transfer to B if A0B0 | 39 | 6.38 | (11.495) | 0 | 50 | 937 | 4.19 | (11.617) | -100 | 160 | 2.20 | 0.462 |
| Transfer to A if A50B100 | 39 | 5.06 | (13.539) | -35 | 50 | 937 | 6.45 | (12.441) | -49 | 80 | 1.38 | 0.532 |
| Transfer to B if A50B100 | 39 | 9.58 | (22.309) | 0 | 125 | 937 | 9.30 | (15.045) | -20 | 80 | 0.27 | 0.724 |
| Transfer to A if A100B200 | 39 | 7.95 | (17.872) | 0 | 80 | 937 | 9.23 | (17.679) | -80 | 80 | 1.29 | 0.388 |
| Transfer to B if A100B200 | 39 | 11.44 | (21.298) | 0 | 80 | 937 | 11.72 | (20.843) | -80 | 100 | 0.28 | 0.649 |
| Transfer to A if A50B0 | 39 | 27.46 | (26.784) | 0 | 100 | 937 | 19.48 | (18.677) | -25 | 160 | 7.98 | 0.084* |
| Transfer to B if A50B0 | 39 | -29.28 | (33.424) | -125 | 5 | 937 | -35.21 | (32.969) | -125 | 80 | 5.93 | 0.152 |
| Transfer to A if A100B0 | 39 | 33.72 | (29.818) | 0 | 160 | 937 | 33.16 | (27.740) | 0 | 160 | 0.56 | 0.895 |
| Transfer to B if A100B0 | 39 | -32.46 | (37.567) | -135 | 5 | 937 | -35.36 | (38.744) | -160 | 160 | 2.90 | 0.476 |
| **4. Total points transferred as C** | | | | | | | | | | | | |
| Transfer if A0B0 | 39 | 15.62 | (21.362) | 0 | 100 | 937 | 15.48 | (19.996) | 0 | 160 | 0.13 | 0.808 |
| Transfer if A50B100 | 39 | 16.44 | (33.309) | 0 | 160 | 937 | 17.18 | (25.589) | 0 | 160 | 0.74 | 0.417 |
| Transfer if A100B200 | 39 | 19.38 | (37.518) | 0 | 160 | 937 | 23.05 | (36.414) | 0 | 160 | 3.67 | 0.308 |
| Transfer if A50B0 | 39 | 57.00 | (41.881) | 0 | 160 | 937 | 55.78 | (37.003) | 0 | 160 | 1.22 | 0.992 |
| Transfer if A100B0 | 39 | 66.44 | (49.701) | 0 | 160 | 937 | 69.72 | (46.977) | 0 | 160 | 3.28 | 0.583 |
| **5. Average transfer willingnes of C** | 39 | 34.97 | (28.390) | 0 | 141 | 937 | 36.24 | (24.910) | 0 | 160 | 1.27 | 0.571 |

Note: Table reports the transfer decisions of two study groups, High School Students with and without any application beforehand; first section indicates the average trust level as Player A; second section represents summary statistics the sum of trustworthiness as Player B; in order to sustain comparability, only observations that also occur in the TPP\R game are considered so far; the third section indicates the average transfers to players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section four aggregates total points spent when facing one of A's and B's decision; fifth section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations as well as minimum and maximum values are reported; additionally table reports a two-sample Mann-Whitney U-Test for the comparison of the distinct study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

# Table 2.A.9: Beliefs of the Students on Norm Enforcement

| | Students with Control Group as Player C | | | | | | | Students with Police Applicants as Player C | | | | | | | Total mean Δ | Mann-Whitney Test (Total) | Mann-Whitney Test (Player A) | Mann-Whitney Test (Player B) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Player A Group | | | Player B Group | | | Δ | Player A Group | | | Player B Group | | | Δ | | | | |
| Variable | Obs. | Mean | Std.Dev | Obs. | Mean | Std.Dev | | Obs. | Mean | Std.Dev | Obs. | Mean | Std.Dev | | | | | |
| **1. Expected points transferred to A and B as C** | | | | | | | | | | | | | | | | | | |
| Transfer to A if A0B0 | 196 | -11.42 | (26.709) | 195 | -13.08 | (24.565) | 1.66 | 201 | -13.77 | (22.283) | 192 | -14.74 | (21.781) | 0.97 | 2.00 | 0.299 | 0.630 | 0.308 |
| Transfer to B if A0B0 | 196 | 7.15 | (17.188) | 195 | 6.53 | (15.489) | 0.62 | 201 | 7.17 | (16.902) | 192 | 7.22 | (16.456) | 0.04 | 0.36 | 0.291 | 0.459 | 0.460 |
| Transfer to A if A50B100 | 196 | 8.43 | (17.022) | 195 | 7.58 | (13.044) | 0.85 | 201 | 7.24 | (13.352) | 192 | 7.29 | (12.142) | 0.04 | 0.74 | 0.591 | 0.421 | 0.939 |
| Transfer to B if A50B100 | 196 | 12.70 | (20.938) | 195 | 12.25 | (19.588) | 0.46 | 201 | 13.64 | (19.033) | 192 | 10.98 | (19.706) | 2.66 | 0.17 | 0.503 | 0.191 | 0.611 |
| Transfer to A if A100B200 | 196 | 12.22 | (23.717) | 195 | 10.10 | (19.511) | 2.12 | 201 | 10.46 | (20.865) | 192 | 10.81 | (20.454) | 0.35 | 0.52 | 0.346 | 0.500 | 0.528 |
| Transfer to B if A100B200 | 196 | 16.65 | (29.966) | 195 | 13.30 | (24.063) | 3.35 | 201 | 15.56 | (22.746) | 192 | 13.96 | (22.830) | 1.59 | 0.21 | 0.325 | 0.541 | 0.484 |
| Transfer to A if A50B0 | 196 | 16.55 | (20.535) | 195 | 12.26 | (13.691) | 4.29 | 201 | 18.10 | (18.730) | 192 | 16.31 | (19.094) | 1.79 | 2.80 | 0.011** | 0.178 | 0.034** |
| Transfer to B if A50B0 | 196 | -20.24 | (31.538) | 195 | -17.46 | (31.802) | 2.78 | 201 | -25.80 | (28.540) | 192 | -25.67 | (29.752) | 0.13 | 6.88 | 0.000*** | 0.019** | 0.009*** |
| Transfer to A if A100B0 | 196 | 25.91 | (28.518) | 195 | 21.16 | (22.700) | 4.75 | 201 | 30.95 | (23.899) | 192 | 24.72 | (23.635) | 6.23 | 4.30 | 0.001*** | 0.003*** | 0.092* |
| Transfer to B if A100B0 | 196 | -28.09 | (42.663) | 195 | -20.69 | (40.747) | 7.40 | 200 | -27.92 | (38.084) | 192 | -33.02 | (41.925) | 5.10 | 6.08 | 0.001*** | 0.146 | 0.001*** |
| **2. Expected total points transferred as C** | | | | | | | | | | | | | | | | | | |
| Transfer if A0B0 | 196 | 25.07 | (33.844) | 195 | 24.02 | (31.378) | 1.05 | 201 | 24.45 | (28.541) | 192 | 26.15 | (30.261) | 1.70 | 0.75 | 0.202 | 0.513 | 0.240 |
| Transfer if A50B100 | 196 | 23.36 | (34.128) | 195 | 19.94 | (30.465) | 3.42 | 201 | 22.83 | (28.535) | 192 | 19.97 | (29.482) | 2.86 | 0.25 | 0.424 | 0.327 | 0.956 |
| Transfer if A100B200 | 196 | 32.18 | (46.833) | 195 | 24.59 | (40.864) | 7.59 | 201 | 29.03 | (38.761) | 192 | 27.26 | (39.976) | 1.78 | 0.24 | 0.252 | 0.678 | 0.235 |
| Transfer if A50B0 | 196 | 43.02 | (37.488) | 195 | 36.13 | (34.846) | 6.88 | 201 | 47.98 | (33.431) | 192 | 45.75 | (38.503) | 2.23 | 7.29 | 0.001*** | 0.065* | 0.006*** |
| Transfer if A100B0 | 196 | 60.35 | (50.667) | 195 | 51.13 | (46.037) | 9.21 | 200 | 68.09 | (44.211) | 192 | 63.59 | (49.590) | 4.50 | 10.10 | 0.001*** | 0.055* | 0.007*** |
| **3. Expected average transfer willingnes of C** | | | | | | | | | | | | | | | | | | |
| | 196 | 36.79 | (34.020) | 195 | 31.16 | (30.766) | 5.63 | 200 | 38.60 | (27.884) | 192 | 36.54 | (30.126) | 2.05 | 3.59 | 0.009*** | 0.157 | 0.026** |

Note: Table reports the transfer decisions of four study groups stating expectations on Player C's behavior: students deciding as Player A matched with the control group, students as Player B matched with the control group, students as Player A matched with the Police Applicants as well as students as Player B matched with Police Applicants; the first section indicates the average transfer beliefs to players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section two aggregates total points spent when facing one of A's and B's decision; third section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations are reported; additionally table reports a two-sample Mann-Whitney U-Test for the comparison of the distinct study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

## 2.B Invitation letters

Figure 2.B.1: Invitation Letter for Police Applicants in Hessen

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

**Goethe-Universität Frankfurt am Main**
Fachbereich Wirtschaftswissenschaften

Prof. Dr. Michael Kosfeld
Prof. Guido Friebel, PhD

Grüneburgplatz 1
60323 Frankfurt/Main

http://www.mm.uni-frankfurt.de

Februar 2010

Sehr geehrte Bewerberin, sehr geehrter Bewerber,

im Rahmen eines aktuellen Forschungsprojekts führt die Goethe-Universität Frankfurt in Zusammenarbeit mit verschiedenen Institutionen eine Onlinestudie durch. Dabei geht es um Entscheidungsverhalten und Einstellungen von Bewerberinnen und Bewerbern verschiedener Ausbildungsberufe.

Wir möchten Sie als **Bewerber/-in für den Polizeiberuf** auf diesem Wege dazu einladen, an dieser Studie teilzunehmen. Alles was Sie hierzu benötigen, ist ein Internetzugang und etwa 20 Minuten Zeit.

Durch Ihre Entscheidungen während der Onlinestudie können Sie **mit etwas Glück Geld verdienen**. Außerdem verlosen wir unter allen Teilnehmern **drei iPod Nano**.

Um an der Studie teilzunehmen, möchten wir Sie bitten, möglichst bald unsere Webseite zu besuchen. Die Studie endet am 01.04.2011.

**https://flex.uni-frankfurt.de/67458**

Geben Sie den folgenden Zugangsschlüssel ein. Bitte beachten Sie, dass jeder Zugangsschlüssel nur einmal verwendet werden kann.

**b9qbd2AG**

Es handelt sich bei unserer Studie um eine rein wissenschaftliche Untersuchung der Goethe-Universität Frankfurt. Alle Persönlichkeitsrechte bleiben selbstverständlich gewahrt. Die Daten werden anonymisiert und ausschließlich für unsere Forschungsarbeit verwendet. **Ein Rückschluss auf Ihre Person bzw. auf Ihre Bewerberdaten bei der Polizei ist ausgeschlossen!**

**Wichtig: Bitte beantworten Sie alle Fragen und Entscheidungen in der Onlinestudie allein, d.h. ohne Absprache mit anderen Personen!**

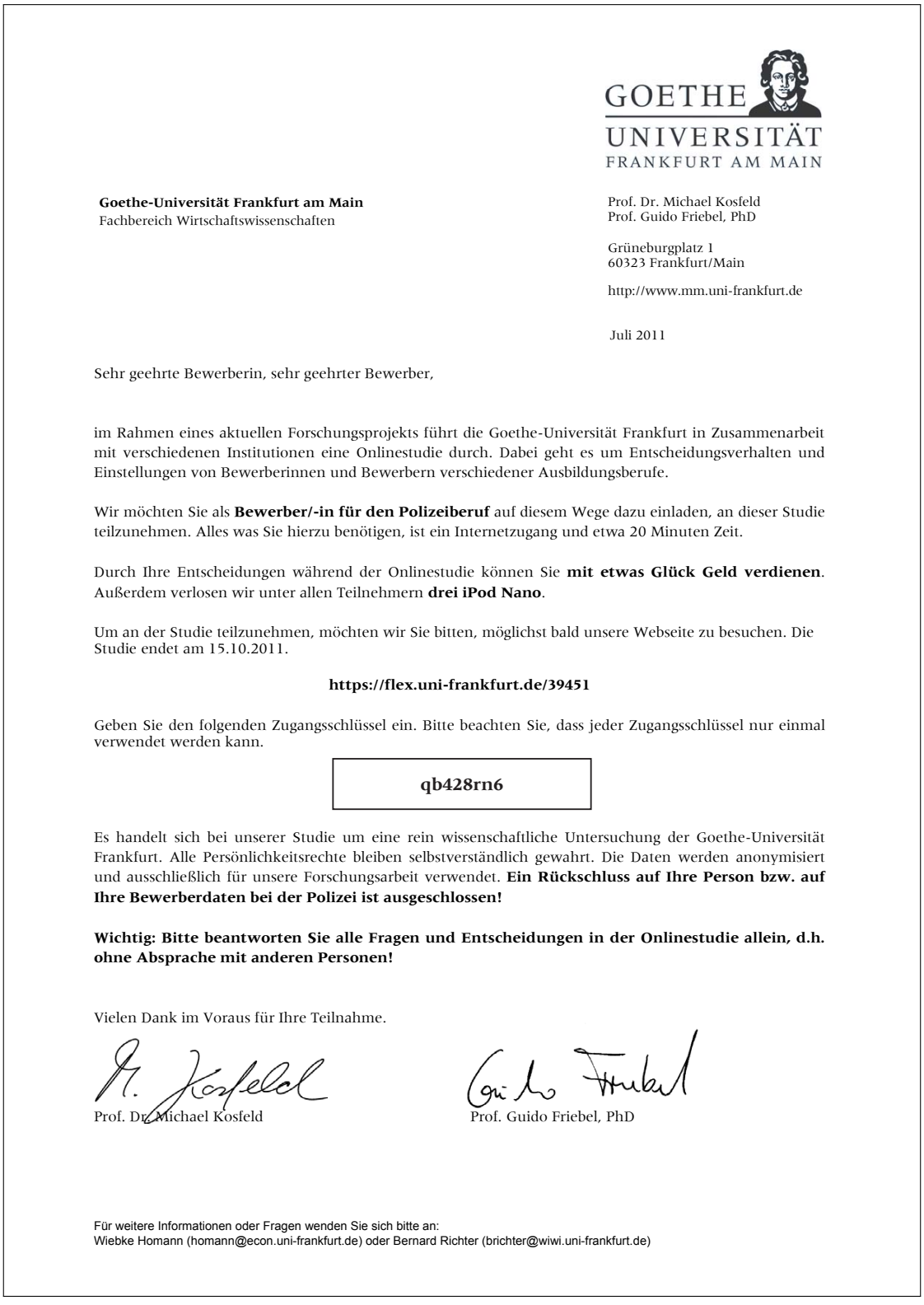
Vielen Dank im Voraus für Ihre Teilnahme.

Prof. Dr. Michael Kosfeld

Prof. Guido Friebel, PhD

Für weitere Informationen oder Fragen wenden Sie sich bitte an:
Wiebke Homann (homann@econ.uni-frankfurt.de) oder Bernard Richter (brichter@wiwi.uni-frankfurt.de)

Figure 2.B.2: Invitation Letter for Police Applicants in RLP



GOETHE UNIVERSITÄT FRANKFURT AM MAIN

**Goethe-Universität Frankfurt am Main**
Fachbereich Wirtschaftswissenschaften

Prof. Dr. Michael Kosfeld
Prof. Guido Friebel, PhD

Grüneburgplatz 1
60323 Frankfurt/Main

http://www.mm.uni-frankfurt.de

Juli 2011

Sehr geehrte Bewerberin, sehr geehrter Bewerber,

im Rahmen eines aktuellen Forschungsprojekts führt die Goethe-Universität Frankfurt in Zusammenarbeit mit verschiedenen Institutionen eine Onlinestudie durch. Dabei geht es um Entscheidungsverhalten und Einstellungen von Bewerberinnen und Bewerbern verschiedener Ausbildungsberufe.

Wir möchten Sie als **Bewerber/-in für den Polizeiberuf** auf diesem Wege dazu einladen, an dieser Studie teilzunehmen. Alles was Sie hierzu benötigen, ist ein Internetzugang und etwa 20 Minuten Zeit.

Durch Ihre Entscheidungen während der Onlinestudie können Sie **mit etwas Glück Geld verdienen**. Außerdem verlosen wir unter allen Teilnehmern **drei iPod Nano**.

Um an der Studie teilzunehmen, möchten wir Sie bitten, möglichst bald unsere Webseite zu besuchen. Die Studie endet am 15.10.2011.

**https://flex.uni-frankfurt.de/39451**

Geben Sie den folgenden Zugangsschlüssel ein. Bitte beachten Sie, dass jeder Zugangsschlüssel nur einmal verwendet werden kann.

**qb428rn6**

Es handelt sich bei unserer Studie um eine rein wissenschaftliche Untersuchung der Goethe-Universität Frankfurt. Alle Persönlichkeitsrechte bleiben selbstverständlich gewahrt. Die Daten werden anonymisiert und ausschließlich für unsere Forschungsarbeit verwendet. **Ein Rückschluss auf Ihre Person bzw. auf Ihre Bewerberdaten bei der Polizei ist ausgeschlossen!**

**Wichtig: Bitte beantworten Sie alle Fragen und Entscheidungen in der Onlinestudie allein, d.h. ohne Absprache mit anderen Personen!**

Vielen Dank im Voraus für Ihre Teilnahme.

Prof. Dr. Michael Kosfeld

Prof. Guido Friebel, PhD

Für weitere Informationen oder Fragen wenden Sie sich bitte an:
Wiebke Homann (homann@econ.uni-frankfurt.de) oder Bernard Richter (brichter@wiwi.uni-frankfurt.de)

Figure 2.B.3: Invitation Letter for German High Schools

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

Goethe-Universität Frankfurt am Main
Management und Mikroökonomie

Wirtschaftswissenschaften

Prof. Dr. Michael Kosfeld
Prof. Guido Friebel, PhD

Telefon +49 (0)69 798 34823
Telefax +49 (0)69 798 35021
E-Mail kosfeld@econ.uni-frankfurt.de
gfriebel@wiwi.uni-frankfurt.de

www.mm.uni-frankfurt.de

Datum: 11. November 2010

**Abiturientinnen und Abiturienten für wirtschaftswissenschaftliche Studie der Goethe-Universität Frankfurt gesucht**

im Rahmen eines aktuellen Forschungsprojekts der Goethe-Universität Frankfurt möchten wir Abiturientinnen und Abiturienten mehrerer Gymnasien in Hessen einladen, an einer Onlinestudie teilzunehmen. In unserer Studie geht es um Entscheidungsverhalten und Einstellungen von Schülerinnen und Schülern in verschiedenen gesellschaftlich relevanten Situationen.

Die Schülerinnen und Schüler benötigen für die Teilnahme lediglich einen Internetzugang und etwa 20 Minuten Zeit. Die Teilnahme lohnt sich: Durch ihre Entscheidungen während der Onlinestudie können die Teilnehmer mit etwas Glück Geld verdienen. Außerdem verlosen wir unter allen Teilnehmern drei iPod Nano.

Damit wir die Untersuchung durchführen können, sind wir auf Ihre Hilfe angewiesen. Wir würden uns freuen, wenn Sie die Schülerinnen und Schüler Ihres derzeitigen Abiturjahrganges auf unsere Studie aufmerksam machen. Hierfür würden wir Ihnen Informationsschreiben zukommen lassen, die wir Sie bitten, in den jeweiligen Klassen zu verteilen.

Bei unserer Studie handelt es sich um eine rein wissenschaftliche Untersuchung der Goethe-Universität Frankfurt. Alle Persönlichkeitsrechte bleiben selbstverständlich gewahrt. Die Daten werden anonymisiert und ausschließlich für unsere Forschungsarbeit verwendet.

Gerne möchten wir Sie in den nächsten Tagen anrufen, um weitere Details zu erläutern. Für Rückfragen stehen wir Ihnen schon jetzt zusammen mit unseren Mitarbeitern Wiebke Homann (homann@econ.uni-frankfurt.de) und Bernard Richter (brichter@wiwi.uni-frankfurt.de) zur Verfügung.

Wir hoffen auf eine positive Antwort und verbleiben mit freundlichen Grüßen

Prof. Dr. Michael Kosfeld  Prof. Guido Friebel, PhD

Figure 2.B.4: Invitation Flyer for German High School Students

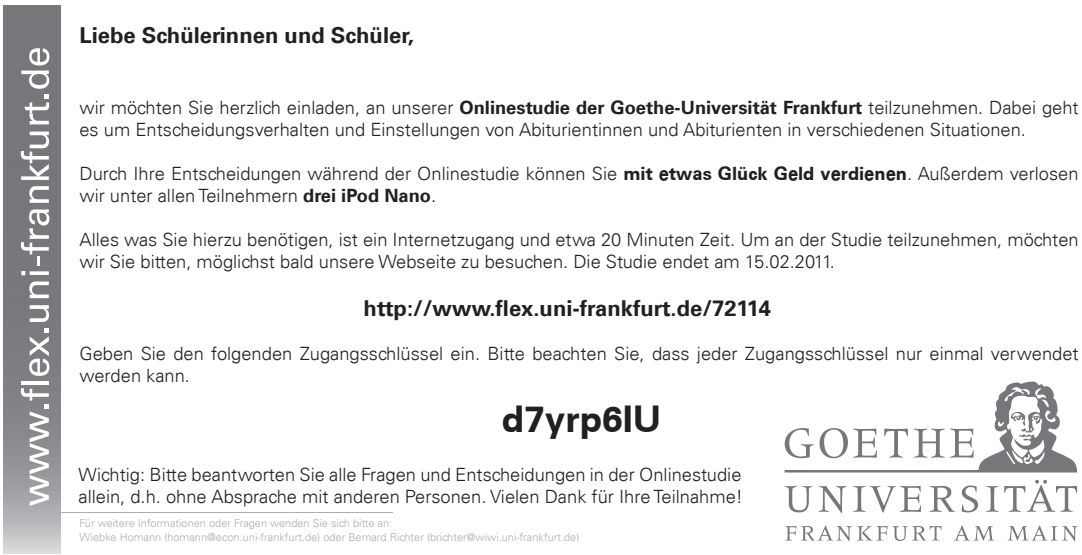


Figure 2.B.5: Information for liason teachers of German High School Students

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# Informationsblatt

## für das Verteilen der Einladungskarten

1. **Bitte stellen Sie sicher, dass Sie ausreichend Einladungskarten für die Schüler/-innen Ihres Leistungskurses haben.**

2. **Bevor Sie die Einladungskarten verteilen, lesen Sie den Schülern/-innen bitte folgenden Text vor:**

   „Im Rahmen eines aktuellen Forschungsprojekts sucht die Goethe-Universität Frankfurt Abiturientinnen und Abiturienten, die an einer Onlinestudie teilnehmen. In der Studie geht es um Entscheidungsverhalten und Einstellungen von Schülerinnen und Schülern in verschiedenen gesellschaftlich relevanten Situationen in Zusammenhang zu verschiedenen Ausbildungsberufen.

   Wer teilnehmen möchte, benötigt lediglich einen Internetzugang und etwa 20 Minuten Zeit. Die Teilnahme lohnt sich: Durch die Entscheidungen während der Onlinestudie können alle Teilnehmer mit etwas Glück Geld verdienen. Außerdem werden unter allen Teilnehmern drei iPod Nano verlost.

   Bei dieser Studie handelt es sich um eine rein wissenschaftliche Untersuchung der Goethe-Universität Frankfurt. Alle Persönlichkeitsrechte bleiben selbstverständlich gewahrt. Die Daten werden anonymisiert und ausschließlich für unsere Forschungsarbeit verwendet.

   Bei der Studie ist es wichtig, dass alle Fragen und Entscheidungen von jedem Teilnehmer alleine beantwortet bzw. getroffen werden, d.h. ohne Absprache mit anderen Personen. Alle Teilnehmer werden dringend gebeten, sich an diese Regel zu halten. Für die Teilnahme bekommt jeder eine Einladungskarte mit einem individualisierten Zugangsschlüssel. Die Einladungskarten sind nicht übertragbar und dürfen nicht weitergegeben werden. Es dürfen nur Schülerinnen und Schüler des Abiturjahrganges an dieser Studie teilnehmen. Jeder Zugangsschlüssel kann nur einmal verwendet werden."

3. **Bitte geben Sie jedem Schüler und jeder Schülerin, die an der Studie teilnehmen möchten, eine Einladungskarte.**

4. **Bitte geben Sie alle nicht verteilten Einladungskarten an die Schulleitung zurück. Diese werden an die Goethe-Universität zurückgesandt.**

**Wir bedanken uns bei Ihnen und bei allen Schülerinnen und Schülern herzlich für Ihre Unterstützung und wünschen allen Teilnehmern bei der Verlosung viel Glück!**

Prof Guido Friebel, PhD
Prof. Dr. Michael Kosfeld

Campus Westend • Grüneburgplatz 1 • D-60323 Frankfurt am Main
Hier wird Wissen Wirklichkeit

# Chapter 3

# Selection and Formation of Motivated Agents – Empirical Evidence from the German Police

Bernard Richter
*Goethe University, Frankfurt*

**Abstract**

In the past decade, self-selection into organizations has been perceived to play a major role in the hiring of employees. The effectiveness of bureaucratic organizations, in particular, relies on the provision of specific effort due to the presence of certain preferences concerning the treatment of clients by such employees. While recent studies have confirmed the self-selection of specific types of individuals using data from applicants to the German police, questions as to whether these candidates were correctly selected and how formation of character during training affects them remain unanswered. Using a third party punishment/reward game framework with applicants to the police and policemen in training as subjects playing the role of norm enforcer, this paper examines whether the selection process is able to identify and hire those with a desirable preference set. Furthermore, we were interested whether the preferences of those selected persisted until the end of their training. Our data confirms that those who are selected behave similarly to those who applied for police duty. Moreover, the same behavior is also observed among policemen in training in their second and third year. It seems that if there is no distortion in the selection process, the police organization is choosing the *right* people and that their preference set is not influenced by experience on the job and during their training phase.

JEL-Classification: C27, C93, D03, J24
Keywords: Self-Selection, Selection, Forming, Police, Trust, Trustworthiness, Norm Enforcement, Experiment

## 3.1 Introduction

Many researchers in the past decades have emphasized that the process for hiring employees is of great importance for the sustainability of firms and for the efficiency of their results. Following the summary work of Oyer and Schaefer (2011), the fundamental economic problem

of hiring seems to be well understood. The task of hiring is one of matching with costly search and bilateral asymmetric information. Job seekers have varying levels of aptitude, skill and motivation, while firms have varying needs for these attributes (Oyer and Schaefer, 2011). If we think about economic efficiency, this requires that the labor market provide the best matches of workers to the firm, which, in fact, leads to two problems. The first is identified as the matching of workers and firms, since they are not able to costlessly observe all necessary aspects of their potential partner, whether employer or employee. The second issue in hiring could be described as the misrepresentation of their own quality, both from applicants and from the firms. Following this concept, Jovanovic (1979) draws a model on the implications on matching in labor markets for firms. His description is that "employment matches persist as long as the expected surplus in the current employment relationship exceeds the parties' outside options" and that "matches that are revealed, over time, to be poor are terminated" (Jovanovic, 1979). As a result of this opinion, a large literature[1] examines the effects of costly search on labor markets, and this is still a vital research area.

In this paper we look at a more specific case of finding the *right*[2] match between an employee and employer. The *right* match might either be determined by looking at achieved complementarities[3], weights on general skills[4], risk taking attitudes[5] or the preferences or beliefs of both parties. While many strands of literature discuss the first three aspects, the focus of this study lies on the last two aspects. As Oyer and Schaefer (2011), among others, point out, employers will benefit from selecting the *right* employees, who are intrinsically motivated to perform the task required for the job. Therefore the *right* employee might also be the one who has certain desired preferences or beliefs. But what are these *right* preferences? Are those persons with the desired preferences the ones that apply? Is the hiring and selection process able to identify those with these desired preferences? And, finally, are the desired preferences stable during the process of forming and training on the job, or only present in the selection phase? In order to shed light to these questions two main obstacles have to be overcome. First, we need to identify a job setting, or environment, that is standardized both in the selection process as well as in the desired action set afterwards. The second obstacle is the availability of empirical data and thus the design of appropriate identification mechanisms. As Oyer and Schaefer (2011) points out: hiring the right employee is potentially as important or more so than motivating the employee

[1]See Mortensen and Pissarides (1999) for a more complete survey of costly search models.

[2]Note that the usage of *right* and *wrong* is to be understood as desired or favorable and undesired or unfavorable.

[3]The use of complementarities in worker effort and firms productivity, for instance if certain employee attributes complement certain production technologies, is discussed in a large literature on assortive matching in labor markets. See e.g. Rosen (1982) for an overview and especially Ichniowski et al. (1997) on the selection and training of skilled workers complementary to adoption and installation of IT investments as an example.

[4]Such skills as proposed in Lazear (2009), where all skills are general, but firms place different weights on different skill combinations.

[5]See Lazear (1998) for an analysis on the degree an employee is risky and on how far this influences his productivity distribution. Burgess et al. (1998) provides further insights using establishment-level data to relate firm-level churning and workforce flows to industry growth rates and mean firm ages.

to take the right action after the employee has been hired (at least for some firms). The relative weakness of the hiring literature is a function of several matters, including idiosyncracies in how firms approach the issue and limitations in data (Oyer and Schaefer, 2011). Following Borghans et al. (2008), economists have long emphasized that organizations can succeed by aligning the interests of the workers with those of the managers. This can be achieved by selecting persons with compatible personality traits (for example, through a bias for trustworthiness, cooperativeness as well as in the enforcement of norms) or by giving specific incentives to workers of each personality type or by a mixture of these strategies (Borghans et al., 2008).

Due to the cooperation with the police academy of the federal state of Hessia in Germany, we were able to get insights into the application and selection process of prospective police officers. Besides the applicants for police duty, we were able the study prospective policemen in different years of their training. To understand the special feature of analyzing this study groups, one has to understand that the bureaucratic organization of the police[6] has, primarily, four tasks to accomplish: first, averting danger; second, criminal prosecution; third, assistance in administrative matters and their implementation; and fourth, preventive actions (Scheer, 2009). Their effectiveness in the exertion of these tasks relies especially on the finding and the forming[7] of a special type of person, who is willing to provide high effort in their job, even under the challenges of police duty. After their application, all physically suitable police applicants are invited to a standardized selection process[8] and are selected using the "Prinzip des Besten" (principle of the best). Of around 6000 applicants each year, on average 550 applicants are chosen (Groß et al., 2008). But who are these people, who apply for the police and were actually taken? A study by Liebl (2003) reveals the motivation of police applicants to be performing an interesting task and having a secure job. This is also confirmed in a recent study of Groß and Schmidt (2009). But, do those that apply incorporate the motivation and the overall preference set that is expected from theories in the economic literature, for example the theory of biased preferences from Prendergast (2007), mission-orientation from Besley and Ghatak (2005) or public service motivation from Francois and Vlassopoulos (2008)? In our study we were able to analyze, whether the selection process of the police is able to provide an effective filter of people with the *right* preferences or whether it is selecting the *wrong* types.

One way of getting the *right* employees is to induce a self-selection of desired individuals into the organization. Following the seminal work of Salop and Salop (1976), a task in labor economics is to induce employees to reveal their private information prior to the hiring decision.

[6]As in all German federal states, the police bears the executive power and is able to enforce law and order, even by the use of force if necessary.

[7]We use the term forming as a description of the three year training phase of prospective policemen who passed the application procedure of the German police in the federal state Hessia. This is based on the crucial assumption that policemen in training pass through a socialization process in the police organization. Behr (2008) provides an overview of the peculiarities of cop culture and its representation in the German Police.

[8]This selection process is developed by the Zentraler Polizeipsychologischer Dienst (ZPD) of the federal police academy of Hessia. While details about the selection process are confidential the overall procedure is described by the police online presence and in the remainder of this section.

In several studies by Edward Lazear[9], for instance, it is pointed out that inducing self-selection is one of the leading explanations for the use of performance-based pay in organizations (Oyer and Schaefer, 2011). But the pay-for-performance approach might not be suitable for all professions and tasks. Recent research, therefore, has focused on other dimensions, such as motivation rather than pure ability. Van den Steen (2005), for instance, assumes that hiring workers, who share the vision of the top management, means that they might be willing to make investments, in terms of time and effort, that are in line with the vision of the firm. Delfgaauw and Dur (2007) draws a model of heterogeneous workers with respect to their intrinsic motivation. By offering a high wage ex-ante, firms will increase their pool of potential applicants, but this also reduces firm profits. If the motivation is observable in the hiring process, firms would tend to renege on the contracts to seek rents, thus identifying the workers with high intrinsic motivation. But if the motivation is unobservable, firms might end up with workers of low intrinsic motivation. In this case, the firm ensures a good match by offering a lower wage, which leads to a higher probability of having the vacancy remain unfilled (Oyer and Schaefer, 2011). Furthermore, the work of Prendergast (2007) states that providing monetary incentives for bureaucrats, such as police officers or social workers, is often not possible. He assumes that there exists a self-selection of certain individuals that is driven by preferences regarding the client that is receiving the treatment. Therefore, he points that a self-selection might become bifurcated into those agents that are the most and the least desired by the employer. This bias influences the effort choice of the agent and, thus, maximizes social surplus. The question is thus, whether such a self-selection, according to actual preferences and desired preferences, is indeed observable. A recent study by Homann (2012) provided insights into the preferences for providing trust and acting trustworthily among police applicants in Germany. Since the police require the citizen to have trust in their role, a desired preference is being trustworthy. Using a trust game experiment in the sense of Berg et al. (1995) and a comparable control group, the work confirms a self-selection of special types of individual, in terms of trustworthiness into the police. Since the provision of law and order can be understood as the enforcement of norms[10], another study by Richter (2013) provides insights into the self-selection of policemen within this dimension. It is shown that people who decide to apply for the police differ in terms of their willingness to enforce norms in a third party punishment/reward experiment. In contrast to the theory of Prendergast (2007), the applicants for the police profession, compared to the control group, show altruistic as well as hostile preferences, rather than one-directional biased preferences. Since these studies analyze participants prior to the hiring stage, they are not able to establish whether people that self-selected were also those who were desired and actually hired by the police organization.

To compare those that apply for the police and those that were selected to become real

[9]See Lazear (1979) on the role of retirement settings as well as Lazear (2000) and Lazear (2004) on the role of pay-for-performance schemes.

[10]Following the idea of Blake and Davis (1964) we understand norms as behaviorial rules that are backed by sanctions.

policemen to shed light upon whether there is biased selection or not, one has to have a close look at the application process. In our study we focus on the application process of the police in the federal state of Hessia[11]. In a first step, all people interested in police duty hand in their application forms. After receiving a letter of acknowledgement, all applications are reviewed for the basic capabilities requirements. A police applicant is required to have at least the educational level Fachhochschulreife, a body height of at least 160cm and to be not older than 34 years. Furthermore, candidates selected for interviews will be required to provide evidence that they have not been convicted or found guilty of any criminal offence[12]. Once these requirements have been met, the applicants receive an invitation for an interview. In a multi-layered and standardized selection process, denoted as EAV[13], all invited applicants are tested in terms of psychological and physiological suitability. The EAV itself takes two days and consists of a computer test, in which intelligence, ability to concentrate, personality traits and orthography are tested, a standardized sport test, a group task and an individual interview. On the second day, all suitable candidates have to pass a medical examination to ensure they posses the physiological capabilities for police duty[14]. Using this EAV, the police organization is able to screen their applicants in the dimensions physical fitness, intellectual ability, social behavior, communication ability, resilience, assumption of responsibility and motivation. As stated above the police selects those with the highest scores in these dimensions following the "principle of the best".

Since the salary for police duty is higher than for other apprenticeships[15], and this is fixed and common knowledge, the theory of matching would predict that desirable and undesirable people will apply for police duty. But only those with high motivation, which might counteract the higher costs of effort experienced, will exert high effort later on. On the other hand, the theory of self-selection assumes that only those with a certain preference set will apply for such an occupation. If this is correct the selection process has to provide an effective filter to separate those with high motivation from those with higher opportunity costs and thus select the *right* employees. Thus, we compare police applicants with policemen in training in their very first year.

Since the selection of desirable employees is subject to the hiring process, there might be another distorting mechanism. As stated in Oyer and Schaefer (2011), hiring could also be

[11]The German police is decentralized to the federal states in Germany, each having its own selection process and police universities. Only the training for the highest positions is centralized in the German Police Academy (DHPol).

[12]Information upon the requirements are taken from the internet portal of the police of the federal state Hessia. Link: http://www.polizei.hessen.de/icc/internetzentral/nav/52d/52d40527-bab6-4021-3104-182109241c24.htm last visited: 29.03.2013.

[13]EAV is short for Eignungsauswahlverfahren des ZPD (Zentralen Polizeipsychologischen Dienst) Hessen.

[14]Since information about the EAV were publicly available, where as the test criteria are not, we use the information from the internet portal of the police of the federal state Hessia. Link: http://www.polizei.hessen.de/icc/internetzentral/nav/e73/e7340527-bab6-4021-3104-182109241c24.htm last visited: 29.03.2013.

[15]The requirements for training in the police include a university of applied sciences bachelor degree at a federal police university.

influenced by a misrepresentation of abilities and preferences, since the candidate has an incentive to behave as desired from by organization. We assume that during the process of training a candidate reveals his real type, which is either in line with the above desired dimensions or not.

In the police organization, all selected policemen undergo a three year training program that includes the passing of several tests, traineeship periods and a bachelor thesis. Thus policemen in training study the basics of police work, as well as theoretical aspects of law, organization and police tactics. The studies are paralleled with practical police operations in varying units[16]. During the traineeships the prospective policemen are confronted with the operational reality of police duty as well as with experienced policemen. On the one hand, they are exposed to the internal culture of the police organization, a masculine and ethnocentric organization that constantly works in the area of tension between their first code, the law, and their second code, social justice (Behr, 2006). On the other hand, they realize the reality of street level bureaucracy and the dilemmas of the individual in public services (Lipsky, 1980). These influential factors can be assumed to have an influence on their own preferences, thus destabilizing their own traits as presumed in Borghans et al. (2008). A comparison of prospective policemen at the beginning with those in the middle as well as those in the last year of their training might therefore be an indicator as to whether those who were selected indeed provide a *right* employee for the police. If we would observe differences this could driven through a biased selection of *wrong* policemen.

Reassembling the experimental setup used in Richter (2013) allows us to analyze the behavior of 481 participants in a third party punishment/reward game. People have to decide how much of their own endowment they are willing to provide for reward or punishment of two other players, given the outcomes in a trust game previously played. Our results indicate that the population of 333 police applicants and 44 first year policemen in training (both from the federal state of Hessia) differ neither in terms of their personal characteristics nor in their willingness to provide transfers in the experiment. Assuming the groups to be comparable, we therefore find the EAV to be a filter that represents the same preferences among the selected as among the self-selected, who handed in their application. Furthermore, the analysis of policemen in training in the different years of study confirms the stability of these preferences, since we do not find any differences between the populations. Due to formal obligations our data is subject to various limitations. The first limitation is the cross sectional type of our study, since we were not allowed track those who applied and have been selected for police duty. Second, the low number of observations is subject to the invitation mechanism at the police and the online experiment portal that needed to be implemented. We were aware that these factors could complicate the generalization and application of our findings since they only represent a snapshot of the current cohorts. Nevertheless, combining the results from Richter (2013)

[16]Information base on the internet portal of the police of the federal state Hessia. Link: http://www.polizei.hessen.de/icc/internetzentral/nav/49a/49a60527-bab6-4021-3104-182109241c24.htm last visited 29.03.2013

with our study shows that the police profession attracts a special sort of applicant and that the characteristics of the pool of applicants are also represented among policemen in training. Policemen, at least at the beginning of their careers, seem to be of a mixed-motive type that are willing to help others, when help is needed, and to punish others, when necessary. Our data is not able to confirm a one-directional bias as is assumed in Prendergast (2007).

The remainder of the paper is organized as follows: Section 3.2 explains briefly the experiment and its procedure. In this section we also provide the characteristics of the subject groups and a brief discussion on their comparability. In Section 3.2.3 we describe the predictions as to the behavior of the participants. We then present the results of the study in Section 3.3 where we first look at those who were accepted, in comparison to those who applied. In a further step we look at a comparison of policemen in training in their different stages of their training. The paper concludes in Section 3.4 and provides a discussion of the application and the limitations of our findings.

## 3.2 Experiment on the enforcement of norms

To answer the question as to whether a self-selection of individuals with certain preferences into a profession is matched with their selection by the organization, we reassemble the experiment conducted in Richter (2013) and extend the participant groups. The online study placed the subjects in the context of a trust game followed by punishment/reward decisions in the role of a norm enforcer. After the experimental part, subjects had to answer control questions about their individual attitudes[17] and demographic characteristics[18].

### 3.2.1 Design

The experiment was designed as a one-shot online experiment using a three stage protocol. In the first two stages of the online experiment participants had to play an investment game in the sense of Berg et al. (1995), first as a trustor and in a second step as a trustee[19]. In the role of the trustor it was explained to all participants that they could transfer 0 EUR, 50 EUR or 100 EUR of their 100 EUR endowment to a trustee. The amount transferred is then tripled by the experimenter. In the role of trustee subjects were again endowed with 100 EUR and received the information that another participant in the study had played the game previously[20]. Subjects then decided how much they were willing to back transfer to the trustor.

[17] Questions regarded attitudes to trust, risk, job motivation, law enforcement, sentencing, punitiveness and life activity.

[18] The entire questionnaire can be found in Appendix A. Note that all experimental instructions and control questions are provided in German.

[19] The investment game is comparable to the widely used and validated trust game described by Kreps (1990). It allows the analysis of trust and trustworthy decisions in experimental and controlled environment.

[20] To provide matching decisions we ran the experiment with students of Goethe University Frankfurt and collected their decisions in the role of trustor as well as in the role of trustee.

If the trustor provided 50 EUR, participants could transfer 0 EUR or 100 EUR back, whereas if the trustor provided 100 EUR – his complete endowment –, the trustee could transfer 0 EUR or 200 EUR back. The decisions in these roles provided a measure of subjects' propensity to trust and to react trustworthily. In the third stage we placed the subjects in the role of a third party that observes the outcomes of two other anonymous players who played the trust game previously. Using the strategy method[21] we provided the participants with five distinct decision cases, A0B0, A50B100, A100B200, A50B0 and A100B0. Subjects were endowed with 160 EUR in each of these cases and asked how many points for punishment and/or for reward they were willing to provide to each player. Assigning one point for punishment cost the subject 1 EUR and reduced the outcome of the respective player, trustor or trustee, by 2 EUR. On the other hand one point used for a reward cost the subjects again 1 EUR but increases the outcome of the respective player by 2 EUR. Points that were not used in transfers were disbursed with an exchange rate of one point = 1 EUR.

Figure 3.2.1: Third Party Punishment/Reward Game

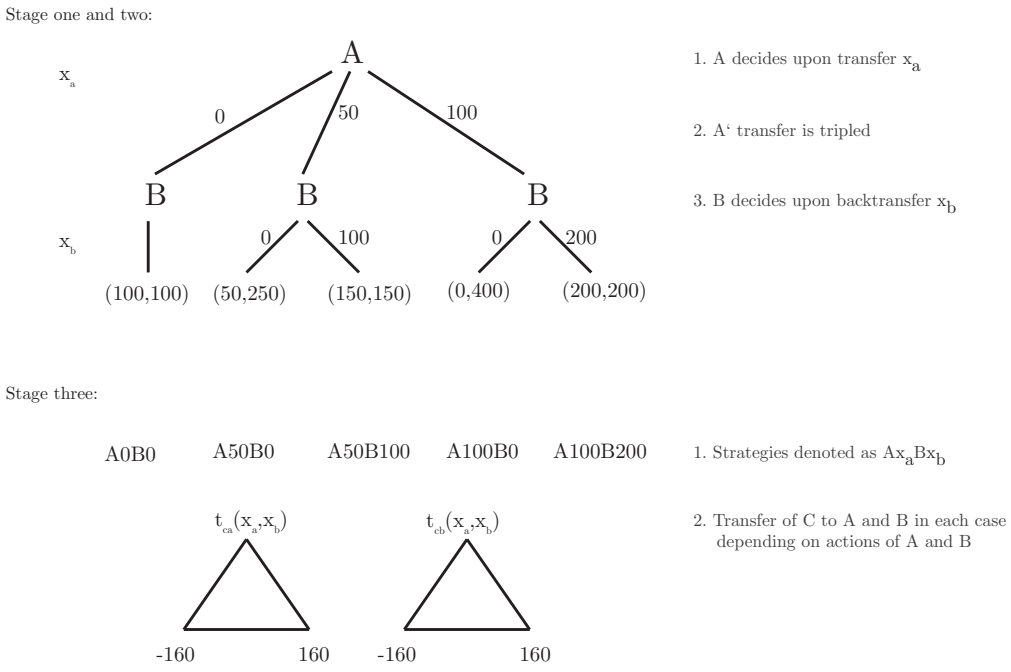


Figure 3.2.1 illustrates the game tree in stage one and two as well as the decision space in stage three. A more detailed description of the third party punishment and/or reward game, TPP/R hereafter, game can be found in Richter (2013). The total timing of the study, therefore, can be described as follows: first we elicit the behavior of the participants in the role of trustor, next in the role of trustee and finally we ask them for their enforcement decisions. Using this design we make sure that all participants in the role of a third party understand the decision space of the trustor and trustee and are able to assess their behavior. The payoffs of players

[21]The strategy method as described by Selten (1967) allows us to survey all possible transfer decisions of the subjects.

were determined by the matching of their decisions with the decisions of university students in the role of trustor and trustee. At the end 15 randomly drawn participants from among the police applicants and 9 participants from among the group of policemen in training were chosen to receive their actual payments from the experiment in their specific role. The average payment among all selected participants was 137.08 EUR. Since we also asked the participants to complete an extensive questionnaire after the experimental decisions, we raffled five iPod Nano among all completed questionnaires[22].

### 3.2.2 Subject groups

The experiment was conducted using the online questionnaire system of FLEX[23] at Goethe University Frankfurt. This allows us to study two groups of participants. The first were police applicants for police duty in the federal state Hessia that had handed in their applications. Participants received a letter of acknowledgement from the police and an invitation letter to participate in our online survey[24]. Each letter contained information about participation conditions, a link to the survey and an individual access code. Using an access code made sure that only invited police applicants could participate in our study. In total 333 police applicants participated in the online questionnaire[25]. This corresponds to a participation rate of 11.9 percent amongst all distributed invitations.

The second group consisted of policemen in training at the federal state of Hessia in different years of their training. This study group consisted of people that had successfully completed the application process and had been selected for training to become a police officer. Especially for the first year of policemen in training, we assume that the only major difference to those who are applying at that moment is that they have been selected[26]. This is rational insofar that the selection process of the police is highly standardized and we did not face a change in this procedure during the period of the survey nor for the three years previously. Due to cooperation with the police academies of the federal state of Hessia, we distributed invitation cards containing information about the study, the link to the survey and, again, an individual access code[27]. The invitation cards were distributed in class by the teachers in all of the four

[22]Note that, for reasons of anonymity, participants had to opt-in to participate in the raffle by giving their access code.

[23]Frankfurt Laboratory for Experimental Economics. For further information visit: http://www.flex.uni-frankfurt.de

[24]The letter of invitation can be found in the Appendix 3.B. In order to reduce a possible spill over, we emphasized that participation did not affect the application process and that the survey is run by Goethe university rather than the police.

[25]We ran the survey in the federal states Hessia and Rheinland-Pfalz, whereas we surveyed policemen in training in Hessia only. Since we compare police applicants with policemen in training we focus in this study only on the police applicants in Hessia

[26]This assumption is crucial, insofar as we were not allowed to identify those applicants that successfully passed the selection process. Therefore, we had to survey the policemen in training that had passed the selection process in the previous year.

[27]The invitation card can be found in the Appendix 3.B. In order to reduce a possible spill over, we emphasized

federal police academies in Hessia[28]. In total 148 policemen in training participated in our study. Since we were also interested as to whether there exist differences between the different years of training we surveyed participants in every year of study. In the end, we obtained 44 participants from the first year, 26 from the second year and 78 from the last year of study. Compared to the number of cards distributed, this corresponds to a participation rate of 12.4 percent.

We ran the experiment in two waves, surveying the group of police applicants of the federal state Hessia in October 2010 and the group of policemen in training in May 2011. Since the hire date for selected police applicants in 2010 was scheduled for September 2011, we made sure that no police applicant participated twice in our study, thus having two unique cohorts. By ending the study in July 2011, we were able to use incomplete (complete) experimental data of more than 333 (321) police applicants and 148 (146) policemen in training in their different years of study.

Table 3.2.1 provides an overview of the characteristics of both study groups. We find the two groups to have a similar gender proportion of around 31 and 36 percent women. Furthermore, both groups show no differences with respect to their height, their educational level, their academical background, the type of city they were raised in as well as their migrational background.

As expected, we found differences in terms of age (Mann-Whitney U-Test: p-value=0.000, two-sided) and current income level (Mann-Whitney U-Test: p-value=0.000, two-sided). On average, policemen in training are older than police applicants as these mostly apply directly from schools and, by receiving a wage during training, they also have a higher income.

To investigate how these characteristics are represented among the policemen in training in their different years of study we provide an overview in Table. 3.2.2. We observe that a higher proportion of women in the first year of study participated in our online experiment, but the difference is not significant (Mann-Whitney U-Test: lowest p-value=0.400, two-sided). Other characteristics, such as height, educational level, academical background, the type of city they were raised in and their migrational background[29] are similar in the different years of study, such that none of the differences is significant. Furthermore, we were able to validate our study with the fact that we observed significant differences in terms of age (Mann-Whitney U-Test: 1st and 2nd year p-value=0.000, 2nd and 3rd year p-value=0.747, two-sided) and available income (Mann-Whitney U-Test: 1st and 2nd year p-value=0.000, 2nd and 3rd year p-value=0.050, two-sided). Especially since the income is increasing as they progress in training the latter fact provides insight that we really surveyed policemen in training in their distinctive

that participation did not affect their grading in their training and that the survey is run by Goethe university rather than the police.

[28]Due to the cooperation with the police, all police academies in Hessia, i.e. Wiesbaden, Mühlheim a. M., Gießen and Kassel, participated in our survey and handed out the invitation cards to their students.

[29]Although policemen in training in their second year of study have a higher fraction of a migrational background we find the difference to be insignificant (Mann-Whitney U-Test: lowest p-value=0.276, two-sided

Table 3.2.1: Demographics (Short)

| Variable | Police Applicants (Hessen) | | Policemen in Training (Hessen) | | Mann-Whitney Test |
|---|---|---|---|---|---|
| | Obs. | Mean | Obs. | Mean | |
| **Personal characteristics:** | | | | | |
| Gender (1 = Female) | 323 | 0.31 (.462) | 148 | 0.36 (.481) | 0.267 |
| Age (years) | 323 | 21.75 (3.178) | 147 | 24.63 (3.778) | 0.000*** |
| Height (in cm) | 323 | 176.74 (10.624) | 148 | 177.48 (8.51) | 0.657 |
| Education (5 = Abitur) | 320 | 4.71 (.453) | 147 | 4.78 (.414) | 0.113 |
| Academic Backround (1 =yes) | 323 | 0.43 (.496) | 148 | 0.51 (.502) | 0.123 |
| Income (in €) | 322 | 464.18 (509.238) | 147 | 1148.55 (420.068) | 0.000*** |
| Grown up in citytype | 323 | 2.74 (1.063) | 148 | 2.81 (1.046) | 0.519 |
| Migrational backround (1 = yes) | 321 | 0.118 (.324) | 148 | 0.074 (.263) | 0.147 |

Note: Table reports no. of observations as well as variable means; standard errors in parenthesis; lowest educational type observed is 4 "Fachabitur" and 5 "Abitur"; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "big cities", 2 "middle sized cities", 3 "small towns" and 4 "rural areas"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

training phases[30]. Thus we consider those who apply for police duty to be comparable to those who already were in training to become a police officer in terms of their socio-demographical characteristics.

Yet another crucial component needs to be taken into account: the motivation to join the police. Groß and Schmidt (2009) found that prospective policemen are both "crime fighters" and "Pensionsbesorgte" (which can be interpreted as: interested in a secure future). The decision to become a police officer is exclusive, since it is more of a vocation than a profession. In in the study of Scheer (2009), this view is confirmed for experienced policemen. To be able to compare our survey groups with respect to their motivation to join the police, we asked them what they consider to be important aspects for their application. Table 3.2.3 provides an overview of the answers of the study groups on a 5-point scale from "not important at all" to "very important".

We find no significant differences between the study groups in the aspects of having a secure job, facing diversified work, working in a teamwork environment, engaging in sport activities and having a good source of income. Only the aspect of proximity to home is valued higher by policemen in training in their first year compared to those that just applied for selection (Mann-Whitney U-Test:p-value=0.001, two-sided). The aspects that inherently go

[30]Note that the wages of policemen in training are fixed and publicly announced online by the police of the federal state of Hessia. Policemen in training earn 1,011.84 EUR in their first year, 1,077.44 EUR in their second year and 1,143.04 EUR in their last year of training. Link: http://www.polizei.hessen.de/icc/internetzentral/nav/49a/49a60527-bab6-4021-3104-182109241c24.htm, last visited: 03.04.2013

Table 3.2.2: Demographics of Policemen in Training (Short)

| Variable | Policemen in Training (Hessen) | | | | | |
|---|---|---|---|---|---|---|
| | 1st year | | 2nd year | | 3rd year | |
| | Obs. | Mean | Obs. | Mean | Obs. | Mean |
| **Personal characteristics:** | | | | | | |
| Gender (1 = Female) | 44 | 0.41 (.497) | 26 | 0.31 (.471) | 78 | 0.35 (.479) |
| Age (years) | 44 | 22.91 (3.326) | 26 | 25.88 (4.33) | 77 | 25.18 (3.527) |
| Height (in cm) | 44 | 176.52 (7.852) | 26 | 179.42 (7.885) | 78 | 177.37 (9.045) |
| Education (5 = Abitur) | 44 | 4.82 (.39) | 26 | 4.73 (.452) | 77 | 4.78 (.417) |
| Academic Backround (1 =yes) | 44 | 0.48 (.505) | 26 | 0.38 (.496) | 78 | 0.56 (.499) |
| Income (in €) | 44 | 1050.77 (251.446) | 25 | 1256.12 (792.293) | 78 | 1169.23 (306.537) |
| Grown up in citytype | 44 | 2.93 (1.065) | 26 | 2.92 (.796) | 78 | 2.71 (1.106) |
| Migrational backround (1 = yes) | 44 | 0.045 (.211) | 26 | 0.115 (.326) | 78 | 0.077 (.268) |

Note: Table reports no. of observations as well as variable means; standard errors in parenthesis; lowest educational type observed is 4 "Fachabitur" and 5 "Abitur"; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "big cities", 2 "middle sized cities", 3 "small towns" and 4 "rural areas"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

together with performing of police duty – i.e. provision of security and order and the aspect of representing authority – were revealed also to be similar for all study participants. Only in the category of the importance of prestige and appreciation do we find differences between those that apply and policemen in training in their first year (Mann-Whitney U-Test:p-value=0.084, two-sided). Overall our findings correspond to the above mentioned studies and reveal that those who apply for the police and those that were selected have almost the same motivation set. Moreover, we observe that progressing in training does not change the evaluation of the initial motivation to join the police.

### 3.2.3 Predictions

Since we were able to identify the two subject groups as being comparable, we can now focus on the experiment, in which we investigate the willingness to enforce norms in a TPP/R game. Following the framework of Richter (2013), we assume the self-selection of people into jobs in the public sector is dictated by their goals. Therefore, we expect people motivated to work in the police to be inherently more willing to enforce norms, even if they have to sacrifice their own payoff in order to do so. The TPP/R game, itself, is designed in such a way that interactions between a trustor and a trustee in a trust game lead to situations with different levels of efficiency, equality and payoffs. Following the notion of Borghans et al. (2008), it can be assumed that social preferences are preferences that depend on the evaluation of social

Table 3.2.3: Aspects of joining the police

| | Police Applicants (Hessen) | | Policemen in Training (Hessen) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1st year | | 2nd year | | 3rd year | |
| Variable | Obs. | Mean | Obs. | Mean | Obs. | Mean | Obs. | Mean |
| **Aspects for an application as policemen:** | | | | | | | | |
| proximity to home | | 2.450 | | 3.136 | | 2.654 | | 2.615 |
| | | (1.209) | | (1.322) | | (1.384) | | (1.321) |
| secure job | | 4.383 | | 4.409 | | 4.385 | | 4.410 |
| | | (0.940) | | (0.972) | | (0.983) | | (0.763) |
| diversified work | | 4.574 | | 4.659 | | 4.692 | | 4.846 |
| | | (0.874) | | (0.888) | | (0.549) | | (0.363) |
| teamwork | | 4.392 | | 4.500 | | 4.192 | | 4.256 |
| | | (0.881) | | (0.952) | | (0.981) | | (0.844) |
| sports | 329 | 4.283 | 44 | 4.136 | 26 | 4.154 | 78 | 4.179 |
| | | (0.964) | | (0.955) | | (0.967) | | (0.879) |
| good source of income | | 3.729 | | 3.977 | | 3.500 | | 3.526 |
| | | (0.912) | | (0.876) | | (1.175) | | (1.053) |
| provision of security and order | | 4.243 | | 4.045 | | 3.885 | | 4.103 |
| | | (0.870) | | (0.914) | | (0.711) | | (0.713) |
| authority | | 3.167 | | 3.205 | | 2.808 | | 2.731 |
| | | (1.036) | | (0.978) | | (0.939) | | (1.065) |
| prestige and appreciation | | 2.872 | | 3.205 | | 2.731 | | 2.628 |
| | | (1.102) | | (1.153) | | (1.079) | | (1.021) |

Note: Table reports the aspects for an application at the police among two study groups: police applicants and policemen in training in their respective study year; range starts with 1 "überhaupt nicht wichtig" and goes up to 5 "Sehr wichtig"; standart deviations can be found in parenthesis; no. of observervations as well as minimum and maximum values are reported; a non-parametric Mann-Whitney U-Test for comparing differences among the study groups is used; statistical significance: * p<.10 , ** p<.05 , *** p<.01

conditions or the intentions of others. Fehr and Schmidt (1999), for instance, analyzes inequality aversion, in which people dislike inequality rather than valuing the decisions or utility of other agents per se, whereas Fehr and Gächter (2000) and Falk and Fischbacher (2006) present evidence on reciprocity and conditional cooperation, in which agents act in a pro-social or antisocial manner depending on the behavior of others with whom they interact (Borghans et al., 2008). In our study subjects face a situation in which they act as a third party. We, therefore, base our predictions of their behavior on the assumption that acting as an uninvolved party depends on their own preferences for desired a behavior of others. This assumption is reasonable, in so far that subjects played also in the roles, where they were going to reward and/or punish, beforehand.

Thus to analyze the selection process itself, we were interested in the comparison of the police applicants with those policemen in training in their very first year. Our hypothesis about the selection of police officers implies that, if the selection process provides an unbiased filter and the appropriate people self-selected beforehand, we should not observe any differences in the behavior in the TPP/R game. The behavior, thus, should be similar in its magnitude as well as in the patterns of the transfer decisions in the role of third party. Otherwise, if we observe differences between the groups, there could be two mechanisms in place. First, if the selection process is biased in one direction, we would observe the selection of only altruistic types, providing reward when needed, or only hostile types, punishing when needed, and thus

no correlation between the transfer decisions. And, second, if the police would not be interested in hiring those who provide high effort to take actions towards others, we would observe that policemen in training reveal a lower willingness to transfer at all in the TPP/R game.

Once the police applicants were selected by the organization and thus were chosen for training, we have the possibility of observing the representation of their preferences over time in a cross sectional study. If we now compare the policemen in training in their different years and find no differences in their willingness to provide effort in the experiment, we can assume that those who have been selected are also those who actually become policemen, after their training. This would also correspond to the assumption of Borghans et al. (2008) that preferences are stable over time and that moulding due to training does not change their own behavior or their valuation of others' behavior. Otherwise, if we observe differences between the different years of study among policemen in training, this could be due to a moulding and thus a socialization process. As stated in Behr (2006), the police have a special form of corporate culture, called cop culture. Possible differences in the evaluation and the treatment of others behavior could arise due to this adaption to the cop culture. Furthermore, if we follow the notion of biased preferences among bureaucrats of Prendergast (2007), we would expect that policemen incorporate either altruistic or hostile biases towards their clients. Since we were not able to identify such a one-directional bias during the process of self-selection of people into the police, such a bias could arise during the moulding process in the training phase. Thus we will also look at the changes in the correlations of decisions in order to identify the arising of such a bias.

## 3.3 Results

The predictions stated in the previous section rely on the assumption that the behavior of participants in the online study will reveal their willingness to enforce norms. Thus, the following results will also shed light upon whether the selection process for a specific profession is able to identify and hire those who are motivated to exert effort on the job.

### 3.3.1 The selection of norm enforcer

Since we assumed that people who self-select into the police organization are expected to reveal a higher willingness to enforce social norms in an experiment, we first compare the police applicants with policemen in training in their very first year.

The player in the role of the norm enforcer played the TPP/R game as described in Section 3.2 and decided, for each possible strategy combination of the trustor and the trustee, how many points he wanted to use for reward or for punishment for each of the two players. Therefore, our prediction implies that those subjects, who are motivated to work in the police, have a lower cost for enforcing norms and therefore spend more points in the experiment than people

of other professions[31]. We assume this additional public service motivation to be revealed in the TPP/R game. If police applicants and policemen in training incorporate such a motivation, we should observe transfers from both groups and comparisons should not indicate any differences.

**General Willingness** In fact, we observe that police applicants reveal similar behavior to those, who have been selected by the police[32]. Police applicants choose on average, over all decisions, to allocate 42.22 points which is higher than the average 36.86 points allocated by policemen in training in their first year, but not significantly so (Mann-Whitney U-Test: p-value=0.1205, two-sided). Both groups, thus, are willing to provide allocations to influence the payoffs of the trustor and the trustee. Following Table 3.A.3 in Appendix 3.A, we were able to distinguish the allocation of points as a norm enforcer using the situation the trustor and the trustee were playing in. We observe all allocations to be significantly different from zero (each one-sample t-test: p-value=$<$ 0.001, two-sided). Again, this confirms the findings of other studies that emphasize the willingness to commit to actions of others, even if this means suffering a loss (e.g. Fischbacher et al., 2001). In the decision cases, in which the trustee behaved reciprocally, A0B0, A50B100 and A100B200, we observed both groups to provide the same amounts of points for the allocations. Furthermore, in the case where the trustor provided 50 EUR and the trustee refrained from reciprocating, we observed also that both groups behaved similarly. Only in the case where the trustor provided the highest transfer of 100 EUR and the trustee defrauded, did we observe that police applicants provided significantly more points for their allocation than policemen in training in their first year (Mann-Whitney U-Test: p-value=0.054, two-sided). We now analyze in detail, how this willingness to allocate points is expressed in the punishment and reward decisions to the particular players.

**Allocations to the trustor** First we look at the transfers to the trustor amongst the two groups of interest. Table 3.3.1 shows the allocation of points to the trustor as well as the frequencies of transfer behavior of both study groups.

In the case where the trustor chose not to provide any amount to the trustee, A0B0, a norm enforcer faces a situation in which both players only received their initial endowment and the investment game is inefficient. Thus, we see that both study groups provide points for the punishment of the trustor. Although, in average terms, police applicants punish more strong, by -5.05 points, than policemen in training, who punish by -4.25 points, we find this difference to be insignificant (Mann-Whitney U-Test: p-value=0.671, two-sided). Around 30 percent of the participants of both groups decided to punish in this situation, whilst around 50 percent chose not to allocate any points. In the cases where the trustor provided 50 EUR or

[31]This has been explicitly shown in Richter (2013).

[32]As described in Section 3.2.2, we assume the two groups to be comparable, since we do not observe any differences in terms of their demographic characteristics, as well as their motivation to apply for the police. Furthermore, according to the police organization, no major changes occurred in the selection process during our data collection period.

Table 3.3.1: Allocations to the trustor

| Variable | Police Applicants | | | | | Policemen in Training - 1st year | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Frequency | | | Obs. | Mean | Frequency | | | | |
| | | | % pun | % zero | % rew | | | % pun | % zero | % rew | | |
| Transfer to A if A0B0 | 333 | -5.05 | 33.6% | 48.4% | 18.0% | 44 | -4.25 | 27.3% | 54.6% | 18.2% | 0.80 | 0.671 |
| Transfer to A if A50B100 | | 9.29 | 2.4% | 38.4% | 59.2% | | 9.27 | 0.0% | 47.7% | 52.3% | 0.01 | 0.658 |
| Transfer to A if A100B200 | | 12.37 | 2.4% | 54.7% | 43.0% | | 10.14 | 4.6% | 56.8% | 38.6% | 2.23 | 0.516 |
| Transfer to A if A50B0 | | 20.22 | 1.5% | 18.9% | 79.6% | | 18.75 | 0.0% | 25.0% | 75.0% | 1.47 | 0.641 |
| Transfer to A if A100B0 | | 38.83 | 0.0% | 15.0% | 85.0% | | 28.77 | 0.0% | 29.6% | 70.5% | 10.06 | 0.003*** |

Note: Table reports the mean and the frequencies of transfer decisions to the trustor; since participants had to decide how much they want to transfer in the range between -160 to +160 points; % pun denotes the frequency when points are sent for punishment, % zero denotes the frequency when zero points are transferred and % rew describes the frequency of rewards for the Control Group and the Police Applicants; statistical significance of differences is indicated as: *p<.10, **p<.05, ***p<.01

100 EUR and the trustee chose to reciprocate, A50B100 and A100B200, we observed that both groups provide reward transfers to the trustor. Interestingly, around 59.2 percent of the police applicants reward the trustor in the case where he provided 50 EUR, whilst only 43.0 percent did so when he provided 100 EUR. Although lower, this pattern is also observable among the policemen in training. On average, both groups provided similar transfers of around 9 points for rewards in the case A50B100 (Mann-Whitney U-Test: p-value=0.658, two-sided) and around 11 points in the case A100B200 (Mann-Whitney U-Test: p-value=0.516, two-sided). It seems that both groups are willing to reward trusting behavior, but they are more willing to do so, when there is medium efficiency, in contrast to when the highest level of efficiency is reached, although the average transfers are higher by around 2 points in the latter case. In the cases where the trustor decided provide a transfer but the trustee decided to defraud, we find people more often providing allocations that are overall higher than in the case where the trustee behaved reciprocally. In the case A50B0, we find that over 75 percent of the norm enforcers are willing to reward the trustor. On average, police applicants provide similar amounts of 20.22 points and policemen in training of 18.75 points (Mann-Whitney U-Test: p-value=0.641, two-sided). When we now look at the rewards in the case A100B0, we see that police applicants provide on average 38.83 points, which is significantly higher than the 28.77 points from the policemen in training (Mann-Whitney U-Test: p-value=0.003, two-sided). Interestingly, more subjects from the police applicants, around 85 percent, find it necessary to help a trustor who lost his entire endowment. With the last case, revealing the only difference between those who applied and those who were selected, it can be stated that people motivated to work for or actually working for the police are willing to reward trusting behavior and that this reward is even higher, when trust is answered by fraud.

**Allocations to the trustee** To analyze how the norm enforcer behaves towards a trustee, who decided on a back transfer, we next focus on Table 3.3.2.

The comparison of the allocations of both study groups to the trustee reveals, overall, no differences. Both groups are willing to provide comparable reward transfers in the cases where

Table 3.3.2: Allocations to the trustee

| Variable | Police Applicants | | | | | Policemen in Training - 1st year | | | | | Δ | Mann-Whitney Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Frequency | | | Obs. | Mean | Frequency | | | | |
| | | | % pun | % zero | % rew | | | % pun | % zero | % rew | | |
| Transfer to B if A0B0 | 333 | 4.63 | 2.7% | 64.3% | 18.0% | 44 | 3.16 | 2.3% | 75.0% | 22.7% | 1.47 | 0.216 |
| Transfer to B if A50B100 | | 11.67 | 2.7% | 37.8% | 59.2% | | 11.98 | 0.0% | 45.5% | 54.6% | 0.31 | 0.775 |
| Transfer to B if A100B200 | | 13.98 | 3.6% | 53.5% | 43.0% | | 13.27 | 6.8% | 54.6% | 38.6% | 0.71 | 0.585 |
| Transfer to B if A50B0 | | -42.25 | 82.0% | 16.5% | 1.5% | | -37.50 | 70.5% | 27.3% | 2.3% | 4.75 | 0.388 |
| Transfer to B if A100B0 | | -39.03 | 71.2% | 26.7% | 2.1% | | -34.02 | 61.4% | 36.4% | 2.3% | 5.01 | 0.230 |

Note: Table reports the mean and the frequencies of transfer decisions to the trustee; since participants had to decide how much they want to transfer in the range between -160 to +160 points; % pun denotes the frequency when points are sent for punishment, % zero denotes the frequency when zero points are transferred and % rew describes the frequency of rewards for the Control Group and the Police Applicants; statistical significance of differences is indicated as: *p<.10, **p<.05, ***p<.01

the trustee behaved reciprocally and decided to back transfer. Furthermore, both groups chose to punish when the trustee defrauded. In the first case, where the trustor decided to keep his endowment, A0B0, the trustee was rewarded for not receiving the possibility to back transfer anything, although more than 64 percent decided not to transfer any reward. When the trustor provided 50 EUR (100 EUR), the police applicants are willing to provide 11.67 (13.98) points on average, which is not different compared to the transfer decisions of policemen in training of 11.98 (13.27) points (Mann-Whitney U-Test: A50B100 p-value=0.775 and A100B200 p-value=0.585, two-sided). Again, we see more subjects providing allocations in the case where the efficiency is mediocre than where efficiency is high, whilst the average of the allocations is the highest in the latter case. It seems that people are willing to subsidize a person that deserves it, more than just granting a reward for what is perceived as good behavior. Unlike in the reward decisions toward the trustee, the allocations for punishment seem to be insensitive to the caused inequality. Police applicants provide -42.25 (-39.03) points[33] for punishment, while policemen in training provide -37.50 (-34.02) points[34] in the case A50B0 (A100B0), in which we find the transfers to be insignificant (Mann-Whitney U-Test: A50B100 p-value=0.388 and A100B200 p-value=0.230, two-sided). Thus, the decision to punish is solely based on the binary decision of the trustee to back transfer and to defraud and does not incorporate the equality caused among the players. If we now reconsider the transfers to the trustor, as described beforehand, we observe that the players prefer to provide higher rewards to the trustor instead of higher punishment to the trustee. Since more than 60 percent of the people decided to punish and more than 70 percent decided to use rewards, we consider that our results are not driven by *anomalies*.

**Correlation** Up to this point we have looked at the allocation decisions at the study group-level and found that both police applicants and those who have been selected provided alloca-

[33]In fact, we find no difference between the transfers to the trustee in the cases A50B0 and A100B0 among the police applicants (one-sample ttest: p-value=0.168, two-sided).

[34]Again, we also find no difference between the transfers to the trustee in the cases A50B0 and A100B0 among policemen in training in their first year (one-sample ttest: p-value=0.128, two-sided).

tions for reward and punishment. Now we focus on the correlation of decisions at an individual level in order to analyze the transfers in the different cases. Following the theory of Prendergast (2007), we were interested as to whether there is a presence of a norm enforcer type, that either rewards or punishes but not both. According to the analysis of Richter (2013), we find that those who self-select in to the police are of a mixed-motive type and thus rewarder and punisher in one person. If we observe the same correlations among the policemen in training, we will be able to show that the selection process is hiring those with mixed-motives rather than those with bifurcated preferences.

Table 3.3.3: Correlations of transfer decisions

**Police Applicants (N=333)**

| | | Transfers to trustor (Player A) | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to trustee (Player B) | A0B0 | 0.192*** | 0.137** | 0.046 | 0.286*** | 0.147*** |
| | A50B100 | -0.255*** | 0.841*** | 0.722*** | 0.325*** | 0.310*** |
| | A100B200 | -0.243*** | 0.691*** | 0.886*** | 0.192*** | 0.327*** |
| | A50B0 | 0.156*** | -0.083 | -0.140** | 0.030 | -0.213*** |
| | A100B0 | 0.142*** | -0.119** | -0.129** | -0.166*** | 0.048 |

**Policemen in Training 1st year (N=44)**

| | | Transfers to trustor (Player A) | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to trustee (Player B) | A0B0 | 0.094 | 0.006 | -0.021 | 0.098 | 0.026 |
| | A50B100 | -0.511*** | 0.913*** | 0.574*** | 0.636*** | 0.461*** |
| | A100B200 | -0.472*** | 0.726*** | 0.864*** | 0.482*** | 0.540*** |
| | A50B0 | 0.055 | -0.203 | -0.107 | -0.103 | -0.233 |
| | A100B0 | -0.042 | -0.280* | -0.372** | -0.030 | 0.119 |

Note: statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

Table 3.3.3 provides an overview of the correlations of transfer decisions for both study groups. Looking at the first three correlations on the diagonal, we find the transfer decisions for the cases, where equality is established among the trustor and the trustee, to be correlated in both study groups. Thus rewarding the trustor leads also to a reward transfer to the trustee. On the contrary, in the cases where the trustee defrauded, we find no correlation between the allocations. This underlines the previous conclusion that punishments are independent of the damage caused in our experiment, while rewards are not. Furthermore, the off diagonal correlations – denoted by the dashed boxes – among both subject pools reveal that at least the decisions in the cases A50B100 and A100B200 for the trustor are significantly negatively correlated to the punishment in the case A100B0 to the trustee. We observe that those, who have been selected by the police, also reveal a mixed-motive type that cares in situations in which help is needed as well as in situations in which punishments are appropriate.

**Robustness of findings** To ensure that our findings are robust with respect to the personal characteristics of the participants, we ran a series of seemingly unrelated regressions on the

transfers for each of the specific cases as dependent variable. Since the correlations revealed the transfers to the trustor and the trustee to be dependent in some cases, we have to capture this relationship. Following the work of Fiebig (2007), seemingly unrelated regressions (SUR) provide a convenient vehicle that allows the estimation of a set of regression equations, thus allowing controlling for interdependencies. Using the Breusch-Pagan test for independence on the residuals of the regression analysis allows us to state whether the residuals of the decisions are still correlated. The regression tables are presented in Appendix 3.A. Table 3.A.5a provides an overview of the regressions on the transfers to the trustor, while Table 3.A.5b presents the regressions on the transfers to the trustee. Each regression includes two specifications: the first (1 SUR) does not include a control variable and confirms the previous observations; the second specification (2 SUR) controls for gender, age, log of income, type of city they were raised in, educational level, academic background[35] and their migrational background. We find that none of the control variable does have an systematical effect in all of the transfer decisions, neither to the trustor nor to the trustee. The income seems to influence own transfer decisions in the situations when equality is established among the players of the investment game, thus explaining the increased reward transfers. Gender differences as well as the citytype they were raised, their educational level as well as their academic and migrational background seem to play a subordinate role in their transfer decisions. This confirms our findings, that those who self-select into the police are comparable to those who have been selected and behave similarly in the role of norm enforcer. The police organization, thus, hires from the pool of the applicants in a way that their preferences are also present among those they are going to train.

**Result 1:** *Comparing people who are motivated to work for the police with those who have been selected for police training reveals them to be similar, except for a higher reward of a trusting person when efficiency is the highest and he is defrauded. Overall, this similarity is confirmed by their personal characteristics as well as by their preferences due to their behavior in the role of a third party norm enforcer. The police selection process hires those with the same preference set as those who apply and thus self-select.*

### 3.3.2 Norm enforcement with respect to training

Focusing on the subject group of policemen in training only, we were able to state, whether the identified preference set is also stable over the period of their training. To shed light on this, we compare policemen in training in the first, second and third years, assuming, given the self-selection and the selection later on, them to reveal a similar public service motivation.

We parallel the analysis from the previous section, in which subjects played in the role of a norm enforcer in the TPP/R game. Again, they had to decide how many points they want to use for punishment and/or reward for each of the given strategies of a trustor and a trustee in an investment game. Our predictions implied, again, that those subject, who are motivated to

[35]Whether one parental part has at least the educational level of the German Abitur.

work in an organization such as the police, should have lower costs for the enforcement of norms and thus be willing to provide allocations in the role of a norm enforcer in our experiment. For the policemen in training, if the criteria of the police selection process have not changed over the past three years, we also would expect to see the same behavior and allocation patterns from all policemen in training.

Following the results of the decisions in our experiment that are presented in Table 3.A.4 in Appendix 3.A, we observe that the policemen in training reveal a similar average transfer willingness. Subjects from all three years are willing to provide allocations to take influence on the payoff of the trustor and the trustee. Those of the first year provide on average 36.86 points, which is not significantly different to those in the second year of training of 39.84 points (Mann-Whitney U-Test: p-value=0.644, two-sided). Comparing the transfers of those in the second year with the provision of 37.45 points of those in the third year reveals, also, no statistical difference (Mann-Whitney U-Test: p-value=0.724, two-sided). It seems that, with respect to their average transfer willingness in the experiment, all subjects can be seen to come from the same population. Furthermore, the analysis of the total points transferred in each situation, A0B0, A50B100, A100B200, A50B0 and A100B0, reveals that subjects of each year are providing significantly more than zero points for the allocation (each one-sample t-test: p-value=$<$ 0.001, two-sided). Next, we analyze again in detail how this willingness to allocate points is expressed in the punishment and reward decisions of the subjects.

**Allocations to the trustor among policemen in training** First, we look at the transfers to the trustor among policemen in training. Table 3.3.4 indicates the allocation of points to the trustor as well as the frequencies of transfer behavior for both study groups.

We observe the same patterns of behavior as in the comparison with those who applied for the police in the previous section. Subjects in the role of a norm enforcer are willing to punish a trustor that is not willing to provide transfers, in the case A0B0, and who is thus acting inefficiently. This punishment is higher among policemen in training in their second year (Mann-Whitney U-Test: p-value=0.091, two-sided) and for the third year (Mann-Whitney U-Test: p-value=0.076, two-sided) compared to those in their first year. Besides the differences in the low efficiency case, we were not able to identify any differences between the allocations of the policemen in training in their different years. In the cases where the trustor provided 50 EUR (100 EUR) and the trustee decided to back transfer, A50B100 and A100B200, we observe that the subjects provide at least 7.13 (10.14) points for rewarding the trustors' behavior. Around 50 (40) percent of the participants chose to provide this reward. The Mann-Whitney tests reveal no statistical significance for the differences between the subjects of different years of training. On the other hand, in the cases where the trustor provided 50 EUR (100 EUR) and the trustee decided to defraud, we observe an increase of the reward transfers to the trustor. Subjects in the role of norm enforcers are willing to provide higher allocations than in the cases where equality was established. In fact, they provide at least 17.96 (28.77) points for

Table 3.3.4: Allocations to the trustor for Policemen in Training

| Variable | Policemen in Training - 1st year Obs. | Mean | Std.Dev. | Δ | Policemen in Training - 2nd year Obs. | Mean | Std.Dev. | Δ | Policemen in Training - 3rd year Obs. | Mean | Std.Dev. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Transfer to A if A0B0 | | -4.25 | (14.83) | 6.90* | | -11.15 | (19.76) | 2.23 | | -8.92 | (21.10) |
| Transfer to A if A50B100 | | 9.27 | (15.08) | 0.66 | | 8.62 | (13.97) | 1.49 | | 7.13 | (13.79) |
| Transfer to A if A100B200 | 44 | 10.14 | (23.56) | 0.44 | 26 | 10.58 | (20.99) | 0.42 | 78 | 11.00 | (21.09) |
| Transfer to A if A50B0 | | 18.75 | (16.35) | 0.79 | | 17.96 | (14.19) | 1.32 | | 19.28 | (21.22) |
| Transfer to A if A100B0 | | 28.77 | (36.39) | 5.80 | | 34.58 | (32.13) | 1.10 | | 35.68 | (34.19) |
| | Frequency | | | | Frequency | | | | Frequency | | |
| | % pun | % zero | % rew | | % pun | % zero | % rew | | % pun | % zero | % rew |
| Transfer to A if A0B0 | 27.3% | 54.6% | 18.2% | | 46.2% | 46.2% | 7.7% | | 42.3% | 47.4% | 10.3% |
| Transfer to A if A50B100 | 0.0% | 47.7% | 52.3% | | 3.9% | 42.3% | 53.8% | | 2.6% | 53.9% | 43.6% |
| Transfer to A if A100B200 | 4.6% | 56.8% | 38.6% | | 7.7% | 50.0% | 42.3% | | 1.3% | 61.5% | 37.2% |
| Transfer to A if A50B0 | 0.0% | 25.0% | 75.0% | | 0.0% | 23.1% | 76.9% | | 0.0% | 28.2% | 71.8% |
| Transfer to A if A100B0 | 0.0% | 29.6% | 70.5% | | 0.0% | 15.4% | 84.6% | | 0.0% | 21.8% | 78.2% |

Note: Table reports the mean and the frequencies of transfer decisions to the trustor; since participants had to decide how much they want to transfer in the range between -160 to +160 points; % pun denotes the frequency when points are sent for punishment, % zero denotes the frequency when zero points are transferred and % rew describes the frequency of rewards for the Control Group and the Police Applicants; statistical significance of differences is indicated as: *p<.10, **p<.05, ***p<.01

rewarding a trustor that faced a loss. Over 70 percent of the participants of all years are willing to provide such a reward transfer. Again the Mann-Whitney tests between the different groups of policemen in training reveal no statistical significance. We can assume a preference for the valuation of trusting behavior to be present and similar among policemen in training, no matter how much they have been molded by the training process or have gained in experience.

**Allocations to the trustee among policemen in training** To analyze how a norm enforcer in the different years of training behaves towards a trustee, who decides to act trustworthily and the back transfer involved, we next look at Table 3.3.5.

Unlike the allocation decisions to a trustor, we were not able to identify any differences between the policemen in training in their different years, when it comes to the allocation to the trustor. The policemen in training, regardless of their current study phase, reveal and confirm the allocation patterns we already described in the previous section. In the cases, where the trustor provided 0 EUR, 50 EUR or 100 EUR and the trustee decided to behave in a reciprocal way, we observe that the policemen in training provide similar reward transfers. These transfers are, overall, higher than the rewards to the trustor. We assume that the subjects value trustworthy behavior slightly more than trusting behavior itself. These differences, the transfer to the trustee compared to the trustor within each year of training, are significant for the case A50B100 (each one-sample t-test: p-value=0.000, two-sided) as well as for the case A100B200 (each one-sample t-test: p-value=0.000, two-sided). Overall, we were not able to identify differences between the different years of training in terms of the provision of rewards. When it comes to the allocation of points in the cases where the trustor provided 50 EUR or 100

Table 3.3.5: Allocations to the trustee for Policemen in Training

| Variable | Policemen in Training - 1st year Obs. | Mean | Std.Dev. | Δ | Policemen in Training - 2nd year Obs. | Mean | Std.Dev. | Δ | Policemen in Training - 3rd year Obs. | Mean | Std.Dev. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Transfer to B if A0B0 | | 3.16 | (06.42) | 0.30 | | 3.46 | (07.04) | 2.63 | | 6.09 | (13.69) |
| Transfer to B if A50B100 | | 11.98 | (20.46) | 2.41 | | 14.38 | (18.42) | 4.27 | | 10.12 | (16.88) |
| Transfer to B if A100B200 | 44 | 13.27 | (26.88) | 0.00 | 26 | 13.27 | (28.39) | 1.12 | 78 | 12.15 | (23.19) |
| Transfer to B if A50B0 | | -37.50 | (33.03) | 0.96 | | -36.54 | (38.46) | 1.53 | | -35.01 | (34.64) |
| Transfer to B if A100B0 | | -34.02 | (44.59) | 0.40 | | -34.42 | (39.68) | 5.82 | | -28.60 | (40.02) |
| | Frequency | | | | Frequency | | | | Frequency | | |
| | % pun | % zero | % rew | | % pun | % zero | % rew | | % pun | % zero | % rew |
| Transfer to B if A0B0 | 2.3% | 75.0% | 22.7% | | 0.0% | 76.9% | 23.1% | | 1.3% | 66.7% | 32.1% |
| Transfer to B if A50B100 | 0.0% | 45.5% | 54.6% | | 0.0% | 42.3% | 57.7% | | 1.3% | 52.6% | 46.2% |
| Transfer to B if A100B200 | 6.8% | 54.6% | 38.6% | | 3.9% | 53.9% | 42.3% | | 2.6% | 60.3% | 37.2% |
| Transfer to B if A50B0 | 70.5% | 27.3% | 2.3% | | 65.4% | 30.8% | 3.9% | | 70.5% | 26.9% | 2.6% |
| Transfer to B if A100B0 | 61.4% | 36.4% | 2.3% | | 61.5% | 34.6% | 3.8% | | 57.7% | 39.7% | 2.6% |

Note: Table reports the mean and the frequencies of transfer decisions to the trustee; since participants had to decide how much they want to transfer in the range between -160 to +160 points; % pun denotes the frequency when points are sent for punishment, % zero denotes the frequency when zero points are transferred and % rew describes the frequency of rewards for the Control Group and the Police Applicants; statistical significance of differences is indicated as: *p<.10, **p<.05, ***p<.01

EUR and the trustee defrauded – did not act reciprocally – we observed that the majority of the subjects used allocations for punishment. Again, we find that the magnitude of punishments is invariant with the inequality caused by the trustee[36]. Policemen in training, regardless of whether they are at the beginning of their training or at the end, value the decision to acting untrustworthy as negative and thus worthy of a punishment. The Mann-Whitney tests, again, reveal no differences between the various training years. We therefore assume that the moulding during the process of training does not influence one's own view of what is regarded as *good* or *bad* behavior. Nor does it change the subjects willingness to provide allocations or its magnitude.

**Correlations of allocations among policemen in training** To analyze the transfer decisions in the experiment at the individual level, we present their correlations, separated for each year of training, in Table 3.3.6.

Again we find the transfers to the trustor and the trustee to be strongly correlated in the cases A50B100 and A100B200. This pattern is observable among all subjects and indicates that the reward of trusting behavior is also connected to the reward allocation for acting trustworthily. If a person is willing to reward such behavior, they reward both players. Interestingly, we only find a significant correlation of allocations in the case A0B0 among the policemen in training in their very last year. This could either be driven by the increased number of observations or by the fact that we received answers from people with different motives than at

[36]In fact, we find no difference between the transfers to the trustee in the cases A50B0 and A100B0 among the police policemen in training in each of their year of training (each one-sample ttest: p-value=>0.174, two-sided).

Table 3.3.6: Correlations of transfer decisions among Policemen in Training

**Policemen in Training 1st year (N=44)**

| | | Transfers to trustor (Player A) | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to trustee (Player B) | A0B0 | 0.094 | 0.006 | -0.021 | 0.098 | 0.026 |
| | A50B100 | -0.511*** | 0.913*** | 0.574*** | 0.636*** | 0.461*** |
| | A100B200 | -0.472*** | 0.726*** | 0.864*** | 0.482*** | 0.540*** |
| | A50B0 | 0.055 | -0.203 | -0.107 | -0.103 | -0.233 |
| | A100B0 | -0.042 | -0.280* | -0.372** | -0.030 | 0.119 |

**Policemen in Training 2nd year (N=26)**

| | | Transfers to trustor (Player A) | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to trustee (Player B) | A0B0 | -0.071 | 0.112 | 0.148 | 0.176 | 0.159 |
| | A50B100 | -0.398** | 0.721*** | 0.685*** | 0.395** | 0.098 |
| | A100B200 | -0.246 | 0.512*** | 0.868*** | 0.276 | 0.068 |
| | A50B0 | 0.454** | -0.418** | -0.378* | 0.073 | -0.410** |
| | A100B0 | 0.278 | -0.515*** | -0.687*** | -0.105 | 0.010 |

**Policemen in Training 3rd year (N=78)**

| | | Transfers to trustor (Player A) | | | | |
|---|---|---|---|---|---|---|
| | | A0B0 | A50B100 | A100B200 | A50B0 | A100B0 |
| Transfers to trustee (Player B) | A0B0 | 0.254** | 0.587*** | 0.298*** | 0.495*** | 0.377*** |
| | A50B100 | 0.095 | 0.899*** | 0.712*** | 0.566*** | 0.357*** |
| | A100B200 | 0.033 | 0.692*** | 0.954*** | 0.563*** | 0.482*** |
| | A50B0 | 0.395*** | 0.070 | -0.232** | 0.069 | -0.239** |
| | A100B0 | 0.215* | -0.169 | -0.087 | -0.109 | 0.111 |

Note: statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

the beginning of their training. Nevertheless, if we look at the correlations in the cases where the trustee defrauded, A50B0 and A100B0, we observe no correlation between the allocations from the norm enforcer. This again confirms that policemen in training in their different years choose to reward and to punish with different numbers of points, linking the punishment to the binary choice of the trustee to back transfer or not, rather than on how much they are willing to reward the trustor. Furthermore, we were also able to find links between the provision of points in the cases where the trustor provided 50 EUR or 100 EUR and the trustee, who chose to back transfer 100 EUR (respectively 200 EUR) or 0 EUR, as indicated by the dashed boxes in Table 3.3.6. We observe significant links between the transfer decisions to the trustor and the trustee and find them to be negative. A person who is thus willing to reward in a situation where rewards are appropriate, is also willing to punish another person who defrauded, by not transferring anything back to the trustor. These links are pronounced among policemen in training in their second year, but also observable among those in their first year. Policemen in their third year of training reveal weaker links between the decisions than the former groups, but still we find at least one significant link and the same negative correlations. A policemen in training, across all years, reveals a mixed-motive type rather than being biased in one direction. Since we were also able to identify this trait among police applicants, we assume the selection

process to be unbiased and thus the initial motivation to work for the police to be persistent during the training phase.

**Robustness of findings** In Section 3.3.1 we find none of the personal characteristics have a systematical influence on the allocation in the role of norm enforcer. Since we are now interested in how behavior in the experiment changes with the different years of training we reran the seemingly unrelated regressions presented in the previous section using the same set of controls. In the pooled regression, the explanatory variables represent dummies for each year of training a person is currently attending. The regression tables are presented in Appendix 3.A. Table 3.A.6a provides an overview of the regressions on the transfers to the trustor among the policemen in training, while Table 3.A.6b presents the regressions on the transfers to the trustee. In the first specification (1 SUR), which excludes control variables, we were not able to find a significant influence of the subjects in their different years of studies on the allocation decisions. These findings are the same for the allocations to the trustor as well as to the trustee. Taking the control variables into account in specification (2 SUR), we find a gender effect resulting in lower rewards in the cases A50B100, A100B200 and A50B0 to the trustor and only in the case A100B200 for the trustee. Age has only a weak influence on allocations to the trustor in the case A50B0, while all other allocations are not affected by age effects. The current income level, except for the transfer to the trustor in the case A100B0, has no significant influence. Other factors such as growing up in a larger city, a lower educational level or an academic background prove to have no systematic influence on the allocation decisions. Interestingly, if we look at the migrational background, we find that people with such a background are less willing to provide points for allocation in some cases. This is mostly observed where the efficiency level is high. Overall the robustness checks confirm our findings that those who have been selected behave very similarly in the role of norm enforcer. Thus, again, the police organization hires from a pool of the applicants in a way that their preferences are also present among those they training, even in different years and phases of their training.

**Result 2:** *Comparing people who have been selected for the police in their different years of training reveals no differences compared to those who just started becoming police officers. This similarity is confirmed by their behavior in the role of a third party norm enforcer and is not disturbed by personal characteristics. Data reveals policemen in training to incorporate mixed-motives, altruistic as well as hostile, rather than a biased motivation.*

## 3.4 Conclusion

The contribution of this paper is to show that inherent preferences of those who self-select into an bureaucratic organization, such as the police, are also present among those who have previously been selected. Furthermore, this paper aims to show that, if a selection process is non-biased, preferences in behavior are also present in the different years of training, con-

tributing to a strand of literature that emphasizes the stability of personality traits. Our data is based on an online experiment at the Frankfurt Laboratory for Experimental Economics in association with the German Police Academy (DHPol) and the police academy of the federal state of Hessia. In total we consider 333 observations from police applicants, who have previously handed in their application, and 148 policemen in different years of their training. Using the framework of a TPP/R game, we were able to analyze the decisions of the subjects who observe a social dilemma situation in the role of a third party norm enforcer.

In Richter (2013), it is shown that there exists a self-selection of certain individuals into a profession that deals with the valuation and the enforcement of norms on a day-to-day basis. We assume that, if persons apply for a profession and the organization perceives them to have the *right* qualifications and preferences, they will be hired. Our results confirm that those, who self-select, and those, who have been selected, are comparable in terms of their personal characteristics as well as in terms of their behavior as a third party norm enforcer. Both groups, the police applicants as well as the policemen in training who had been hired the year before, behave in the same way. More precisly, they provide allocations in the same magnitude and in the same pattern, by rewarding people in situations, where help is needed, and by punishing, when somebody has been exploited. Contrary to some theories of public service motivation, the prospective bureaucrats show altruistic as well as hostile motivation in the treatment of their clients in a social dilemma situation. A bifurcation of extreme types is not observable, neither among those who self-selected themselves nor among those who have been selected.

Another topic addressed by this paper is the question of the moulding during the different phases of training. We assumed that, if hiring the right employees is distorted by the misrepresentation of their own abilities and preferences, as pointed out in Oyer and Schaefer (2011), we might observe discrepancies in the behavior of the policemen in different years of their training. Since they already passed the selection process, they are assumed to reveal their real preferences and motivation afterwards. Especially, for policemen in training in their very last year, we would expect to observe an overall difference in behavior since they were close to becoming real police officers. Our results, however, indicate that behavior in the experiment of the different cohorts – the first, second and third years – are comparable, and that they are not systematically influenced by personal characteristics. Thus, the provision of allocations in the TPP/R game indicates that the magnitudes as well as the patterns are not dependent on the cohort. Assuming the selection process has not changed over the past three years, would indeed confirm that self-selection and the transition into the active police are closely related to each other. This also follows Alonso (2013): if applicants differ in their perceived productivity on the job, the composition of a self-selected applicant pool provides additional information to the firm in the selection process.

Since our data is cross-sectional, we can not rule out completely that our results are intertwined with cohort and selection effects. By controlling for personal characteristics, we are confident in capturing these effects. Also, the limited number of observations might not

allow representative statements for all policemen in training and in any case not for all bureaucratic organizations. Overall, in line with the theory of self-selection into the public sector (e.g. Besley and Ghatak, 2005; Delfgaauw and Dur, 2008; Francois and Vlassopoulos, 2008), our results confirm that police applicants as well as policemen in training are willing to give up monetary benefits in order to assign treatments to others. We assume that the selection process, at least of the bureaucratic organization of the police, is able to identify and hire those with the desired preferences. We think that the corporate culture of the police, as described, researched and confirmed in various studies, has a crucial influence. Using a publicly discussed and constantly visible tradition of this culture and its idiosyncracies, it attracts a certain kind of person in such a way that the socialization process during training does not change their preference sets. Furthermore, when we think of the stability of personality traits, inducing a self-selection might be the only way of hiring those who are willing to provide high effort on the job, with respect to their outside options and their fixed payments.

While we were here able to make statements on the selection into and moulding in the bureaucratic organization police, the question of the persistence of the observed behavior in daily routine arises. Due to restrictions, we were not allowed to collect panel data on the policemen, which might be a useful extension for future studies. The question then might be: if self-selection is working, the selection process is hiring the right employees and the moulding process is not changing the preference set, is it possible to establish the desired behavior and thus the effort on the job by including the measurement of the preference set? This question addresses a comparison between those who just entered the organization and experienced police officers and might clarify whether identified motivation is really inducing higher effort on the job.

## 3.A Tables

# Table 3.A.1: Demographics by Gender

| Variable | Complete | | | | | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Police Applicants (Hessen)** | | **Policemen in Training (Hessen)** | | **Mann-Whitney Test** | Police Applicants (Hessen) | | Policemen in Training (Hessen) | | Mann-Whitney Test | Police Applicants (Hessen) | | Policemen in Training (Hessen) | | Mann-Whitney Test |
| | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | | Obs. | Mean | Obs. | Mean | |
| **Personal characteristics:** | | | | | | | | | | | | | | | |
| Gender (1 = Female) | 323 | 0.31 (.462) | 148 | 0.36 (.481) | 0.267 | | | | | | | | | | |
| Age (years) | 323 | 21.75 (3.178) | 147 | 24.63 (3.778) | 0.000*** | 224 | 21.85 (3.14) | 94 | 25.41 (4.025) | 0.000*** | 99 | 21.53 (3.268) | 53 | 23.23 (2.826) | 0.000*** |
| Height (in cm) | 323 | 176.74 (10.624) | 148 | 177.48 (8.51) | 0.657 | 224 | 181.08 (6.386) | 95 | 182.35 (5.849) | 0.122 | 99 | 166.90 (11.707) | 53 | 168.75 (4.69) | 0.209 |
| Education (5 = Abitur) | 320 | 4.71 (.453) | 147 | 4.78 (.414) | 0.113 | 222 | 4.70 (.458) | 95 | 4.71 (.458) | 0.964 | 98 | 4.73 (.444) | 52 | 4.92 (.269) | 0.006*** |
| Academic Backround (1 =yes) | 323 | 0.43 (.496) | 148 | 0.51 (.502) | 0.123 | 224 | 0.44 (.498) | 95 | 0.55 (.5) | 0.085* | 99 | 0.40 (.493) | 53 | 0.43 (.5) | 0.722 |
| Income (in €) | 322 | 464.18 (509.238) | 147 | 1148.55 (420.068) | 0.000*** | 224 | 479.06 (520.727) | 94 | 1191.31 (511.873) | 0.000*** | 98 | 430.17 (482.818) | 53 | 1072.72 (132.929) | 0.000*** |
| Grown up in citytype | 323 | 2.74 (1.063) | 148 | 2.81 (1.046) | 0.519 | 224 | 2.68 (1.068) | 95 | 2.71 (1.061) | 0.863 | 99 | 2.88 (1.043) | 53 | 3.00 (1.) | 0.504 |
| Migrational backround (1 = yes) | 321 | 0.118 (.324) | 148 | 0.074 (.263) | 0.147 | 222 | 0.126 (.333) | 95 | 0.084 (.279) | 0.282 | 99 | 0.101 (.303) | 53 | 0.057 (.233) | 0.353 |

Note: Table reports no. of observations as well as variable means; standard errors in parenthesis; lowest educational type observed is 4 "Fachabitur" and 5 "Abitur"; academic backround is coded as 1 if one of the parents reached the so called the permission to study at an university; citytype is coded as 1 "big cities", 2 "middle sized cities", 3 "small towns" and 4 "rural areas"; migrational background is present, if participant has or had another citizenship; two-sample Mann-Whitney test is used for the comparison of the distinct study groups; statistical significance is indicated as *** p<0.01 ** p<0.05 * p<0.1

Table 3.A.2: Transfer Decisions in the TPP/R Game

| Variable | Police Applicants (1) Obs. | Mean | Std.Dev | Min | Max | Policemen in Training (2) Obs. | Mean | Std.Dev | Min | Max | Δ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Trust** | | | | | | | | | | | |
| Transfer as Player A | 333 | 56.01 | (34.840) | 0 | 100 | 151 | 63.25 | (35.917) | 0 | 100 | 7.24** |
| **2. Trustworthieness** | | | | | | | | | | | |
| Backtransfer as Player B if A sent 50 (a) | 333 | 78.38 | (41.228) | 0 | 100 | 151 | 79.47 | (40.526) | 0 | 100 | 1.09 |
| Backtransfer as Player B if A sent 100 (b) | 333 | 156.16 | (82.868) | 0 | 200 | 151 | 144.37 | (89.915) | 0 | 200 | 11.79 |
| Backtransfer as Player B (joint (a)+(b)) | 333 | 234.53 | (111.572) | 0 | 300 | 151 | 223.84 | (117.592) | 0 | 300 | 10.69 |
| **3. Points transferred to A and B as C** | | | | | | | | | | | |
| Transfer to A if A0B0 | 333 | -5.05 | (17.163) | -60 | 40 | 151 | -7.83 | (19.071) | -50 | 80 | 2.79* |
| Transfer to B if A0B0 | 333 | 4.63 | (13.064) | -50 | 160 | 151 | 4.73 | (10.896) | -25 | 80 | 0.09 |
| Transfer to A if A50B100 | 333 | 9.29 | (14.683) | -15 | 80 | 151 | 7.87 | (14.056) | -20 | 80 | 1.42* |
| Transfer to B if A50B100 | 333 | 11.67 | (18.104) | -20 | 95 | 151 | 11.32 | (18.097) | -10 | 100 | 0.35 |
| Transfer to A if A100B200 | 333 | 12.37 | (21.931) | -40 | 80 | 151 | 10.46 | (21.524) | -40 | 80 | 1.91 |
| Transfer to B if A100B200 | 333 | 13.98 | (24.640) | -50 | 100 | 151 | 12.43 | (24.921) | -50 | 100 | 1.55 |
| Transfer to A if A50B0 | 333 | 20.22 | (19.043) | -35 | 160 | 151 | 18.75 | (18.547) | 0 | 130 | 1.47 |
| Transfer to B if A50B0 | 333 | -42.25 | (34.194) | -125 | 60 | 151 | -35.67 | (34.444) | -125 | 30 | 6.58** |
| Transfer to A if A100B0 | 333 | 38.83 | (32.131) | 0 | 160 | 151 | 33.13 | (34.188) | 0 | 160 | 5.70*** |
| Transfer to B if A100B0 | 333 | -39.03 | (42.142) | -160 | 160 | 151 | -30.95 | (40.959) | -160 | 80 | 8.08** |
| **4. Total points transferred as C** | | | | | | | | | | | |
| Transfer if A0B0 | 333 | 16.92 | (21.294) | 0 | 160 | 151 | 17.33 | (22.681) | 0 | 160 | 0.42 |
| Transfer if A50B100 | 333 | 21.80 | (31.200) | 0 | 160 | 151 | 19.75 | (31.002) | 0 | 160 | 2.06* |
| Transfer if A100B200 | 333 | 28.66 | (44.117) | 0 | 160 | 151 | 27.28 | (43.013) | 0 | 160 | 1.38 |
| Transfer if A50B0 | 333 | 63.73 | (37.671) | 0 | 160 | 151 | 55.34 | (39.360) | 0 | 160 | 8.39** |
| Transfer if A100B0 | 333 | 79.97 | (49.492) | 0 | 160 | 151 | 66.57 | (49.756) | 0 | 160 | 13.40*** |
| **5. Average transfer willingnes of C** | 333 | 42.22 | (26.868) | 0 | 160 | 151 | 37.26 | (29.559) | 0 | 160 | 4.96** |

Note: Table reports the transfer decisions of two study groups, police applicants and policemen in training; first section indicates the average trust level as Player A; second section represents summary statistics the sum of trustworthiness as Player B; in order to sustain comparability, only observations that also occur in the TPP\R game are considered so far; the third section indicates the average transfers to players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section four aggregates total points spent when facing one of A's and B's decision; fifth section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations as well as minimum and maximum values are reported; additionally table reports a two-sample Mann-Whitney U-Test on the differences of behavior of the study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

Table 3.A.3: Transfer Decisions in the TPP/R Game on the Selection

| Variable | Police Applicants | | | | | Policemen in Training - 1st year | | | | | Δ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | Std.Dev | Min | Max | Obs. | Mean | Std.Dev | Min | Max | |
| **1. Trust** | | | | | | | | | | | |
| Transfer as Player A | 333 | 56.01 | (34.840) | 0 | 100 | 44 | 65.91 | (33.710) | 0 | 100 | 9.90* |
| **2. Trustworthieness** | | | | | | | | | | | |
| Backtransfer as Player B if A sent 50 (a) | 333 | 78.38 | (41.228) | 0 | 100 | 44 | 75.00 | (43.802) | 0 | 100 | 3.38 |
| Backtransfer as Player B if A sent 100 (b) | 333 | 156.16 | (82.868) | 0 | 200 | 44 | 140.91 | (92.304) | 0 | 200 | 15.25 |
| Backtransfer as Player B (joint (a)+(b)) | 333 | 234.53 | (111.572) | 0 | 300 | 44 | 215.91 | (121.891) | 0 | 300 | 18.63 |
| **3. Points transferred to A and B as C** | | | | | | | | | | | |
| Transfer to A if A0B0 | 333 | -5.05 | (17.163) | -60 | 40 | 44 | -4.25 | (14.828) | -50 | 20 | 0.80 |
| Transfer to B if A0B0 | 333 | 4.63 | (13.064) | -50 | 160 | 44 | 3.16 | (06.419) | -5 | 20 | 1.47 |
| Transfer to A if A50B100 | 333 | 9.29 | (14.683) | -15 | 80 | 44 | 9.27 | (15.083) | 0 | 50 | 0.01 |
| Transfer to B if A50B100 | 333 | 11.67 | (18.104) | -20 | 95 | 44 | 11.98 | (20.465) | 0 | 100 | 0.31 |
| Transfer to A if A100B200 | 333 | 12.37 | (21.931) | -40 | 80 | 44 | 10.14 | (23.562) | -40 | 80 | 2.23 |
| Transfer to B if A100B200 | 333 | 13.98 | (24.640) | -50 | 100 | 44 | 13.27 | (26.884) | -40 | 100 | 0.71 |
| Transfer to A if A50B0 | 333 | 20.22 | (19.043) | -35 | 160 | 44 | 18.75 | (16.350) | 0 | 52 | 1.47 |
| Transfer to B if A50B0 | 333 | -42.25 | (34.194) | -125 | 60 | 44 | -37.50 | (33.035) | -100 | 10 | 4.75 |
| Transfer to A if A100B0 | 333 | 38.83 | (32.131) | 0 | 160 | 44 | 28.77 | (36.386) | 0 | 160 | 10.06** |
| Transfer to B if A100B0 | 333 | -39.03 | (42.142) | -160 | 160 | 44 | -34.02 | (44.590) | -160 | 48 | 5.01 |
| **4. Total points transferred as C** | | | | | | | | | | | |
| Transfer if A0B0 | 333 | 16.92 | (21.294) | 0 | 160 | 44 | 12.41 | (15.771) | 0 | 50 | 4.51 |
| Transfer if A50B100 | 333 | 21.80 | (31.200) | 0 | 160 | 44 | 21.25 | (34.785) | 0 | 150 | 0.55 |
| Transfer if A100B200 | 333 | 28.66 | (44.117) | 0 | 160 | 44 | 28.95 | (46.244) | 0 | 160 | 0.29 |
| Transfer if A50B0 | 333 | 63.73 | (37.671) | 0 | 160 | 44 | 56.70 | (38.284) | 0 | 125 | 7.03 |
| Transfer if A100B0 | 333 | 79.97 | (49.492) | 0 | 160 | 44 | 64.98 | (52.085) | 0 | 160 | 14.99* |
| **5. Average transfer willingnes of C** | 333 | 42.22 | (26.868) | 0 | 160 | 44 | 36.86 | (29.832) | 0 | 122 | 5.36 |

Note: Table reports the transfer decisions of two study groups, police applicants and policemen in training in their very first year of training; first section indicates the average trust level as Player A; second section represents summary statistics the sum of trustworthiness as Player B; in order to sustain comparability, only observations that also occur in the TPP\R game are considered so far; the third section indicates the average transfers to players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section four aggregates total points spent when facing one of A's and B's decision; fifth section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations as well as minimum and maximum values are reported; additionally table reports a two-sample Mann-Whitney U-Test on the differences of behavior of the study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

Table 3.A.4: Transfer Decisions of Policemen in Training in the TPP/R Game

| | Policemen in Training - 1st year | | | | | Policemen in Training - 2nd year | | | | | Policemen in Training - 3rd year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Obs. | Mean | Std.Dev | Min | Max | Obs. | Mean | Std.Dev | Min | Max | Obs. | Mean | Std.Dev | Min | Max |
| **1. Trust** | | | | | | | | | | | | | | | |
| Transfer as Player A | 44 | 65.91 | (33.710) | 0 | 100 | 26 | 61.54 | (40.762) | 0 | 100 | 78 | 63.46 | (35.742) | 0 | 100 |
| **2. Trustworthieness** | | | | | | | | | | | | | | | |
| Backtransfer as Player B if A sent 50 (a) | 44 | 75.00 | (43.802) | 0 | 100 | 26 | 80.77 | (40.192) | 0 | 100 | 78 | 83.33 | (37.509) | 0 | 100 |
| Backtransfer as Player B if A sent 100 (b) | 44 | 140.91 | (92.304) | 0 | 200 | 26 | 138.46 | (94.136) | 0 | 200 | 78 | 151.28 | (86.405) | 0 | 200 |
| Backtransfer as Player B (joint (a)+(b)) | 44 | 215.91 | (121.891) | 0 | 300 | 26 | 219.23 | (120.064) | 0 | 300 | 78 | 234.62 | (111.457) | 0 | 300 |
| **3. Points transferred to A and B as C** | | | | | | | | | | | | | | | |
| Transfer to A if A0B0 | 44 | -4.25 | (14.828) | -50 | 20 | 26 | -11.15 | (19.764) | -50 | 20 | 78 | -8.92 | (21.095) | -50 | 80 |
| Transfer to B if A0B0 | 44 | 3.16 | (06.419) | -5 | 20 | 26 | 3.46 | (07.038) | 0 | 25 | 78 | 6.09 | (13.691) | -25 | 80 |
| Transfer to A if A50B100 | 44 | 9.27 | (15.083) | 0 | 50 | 26 | 8.62 | (13.969) | -20 | 50 | 78 | 7.13 | (13.791) | -10 | 80 |
| Transfer to B if A50B100 | 44 | 11.98 | (20.465) | 0 | 100 | 26 | 14.38 | (18.415) | 0 | 60 | 78 | 10.12 | (16.875) | -10 | 80 |
| Transfer to A if A100B200 | 44 | 10.14 | (23.562) | -40 | 80 | 26 | 10.58 | (20.992) | -30 | 80 | 78 | 11.00 | (21.089) | -40 | 80 |
| Transfer to B if A100B200 | 44 | 13.27 | (26.884) | -40 | 100 | 26 | 13.27 | (28.388) | -50 | 100 | 78 | 12.15 | (23.191) | -40 | 80 |
| Transfer to A if A50B0 | 44 | 18.75 | (16.350) | 0 | 52 | 26 | 17.96 | (14.186) | 0 | 50 | 78 | 19.28 | (21.218) | 0 | 130 |
| Transfer to B if A50B0 | 44 | -37.50 | (33.035) | -100 | 10 | 26 | -36.54 | (38.465) | -125 | 10 | 78 | -35.01 | (34.645) | -125 | 30 |
| Transfer to A if A100B0 | 44 | 28.77 | (36.386) | 0 | 160 | 26 | 34.58 | (32.129) | 0 | 160 | 78 | 35.68 | (34.191) | 0 | 160 |
| Transfer to B if A100B0 | 44 | -34.02 | (44.590) | -160 | 48 | 26 | -34.42 | (39.682) | -110 | 30 | 78 | -28.60 | (40.024) | -160 | 80 |
| **4. Total points transferred as C** | | | | | | | | | | | | | | | |
| Transfer if A0B0 | 44 | 12.41 | (15.771) | 0 | 50 | 26 | 17.31 | (20.161) | 0 | 60 | 78 | 20.53 | (26.443) | 0 | 160 |
| Transfer if A50B100 | 44 | 21.25 | (34.785) | 0 | 150 | 26 | 24.54 | (30.415) | 0 | 100 | 78 | 17.81 | (29.552) | 0 | 160 |
| Transfer if A100B200 | 44 | 28.95 | (46.244) | 0 | 160 | 26 | 30.77 | (43.444) | 0 | 160 | 78 | 26.23 | (41.968) | 0 | 160 |
| Transfer if A50B0 | 44 | 56.70 | (38.284) | 0 | 125 | 26 | 55.27 | (39.419) | 0 | 135 | 78 | 55.58 | (40.628) | 0 | 160 |
| Transfer if A100B0 | 44 | 64.98 | (52.085) | 0 | 160 | 26 | 71.31 | (48.378) | 0 | 160 | 78 | 67.10 | (49.627) | 0 | 160 |
| **5. Average transfer willingnes of C** | 44 | 36.86 | (29.832) | 0 | 122 | 26 | 39.84 | (29.497) | 0 | 111 | 78 | 37.45 | (29.948) | 0 | 160 |

Note: Table reports the transfer decisions of policemen in training in each of their study years; first section indicates the average trust level as Player A; second section represents summary statistics the sum of trustworthiness as Player B; in order to sustain comparability, only observations that also occur in the TPP\R game are considered so far; the third section indicates the average transfers to players A and B as Player C in the TPP\R game, which are collected using the strategy method; positive value indicates reward transfer, while negative values indicate punishment; section four aggregates total points spent when facing one of A's and B's decision; fifth section averages the transfer willingness based on total points spent; standard deviations are presented in parenthesis; no. of observations as well as minimum and maximum values are reported; additionally table reports a two-sample Mann-Whitney U-Test on the differences of behavior of the study groups; null-hypothesis assumes that both groups come from the same population, if rejected alternative hypothesis applies and groups can be viewed as coming from different populations; statistical significance is indicated as: *p<.10, **p<.05, ***p<.01

Table 3.A.5a: SUR Regressions of points transferred to the trustor in TPP/R Game on the Selection

| **Dependent Variable: Transfer to A in the case** | **A0B0** | | **A50B100** | | **A100B200** | | **A50B0** | | **A100B0** | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) |
| **Dummy Variable for beeing a Police Applicant** | 0.795 | 3.872 | -0.014 | -0.999 | -2.233 | -2.747 | -1.466 | -3.791 | -10.062* | -14.551** |
| | (2.705) | (2.960) | (2.356) | (2.552) | (3.539) | (3.802) | (3.000) | (3.000) | (5.223) | (5.621) |
| **Control Variables** | | | | | | | | | | |
| Gender (1 = Female) | | -1.343 | | 1.810 | | 2.397 | | 4.824** | | 5.203 |
| | | (1.895) | | (1.635) | | (2.435) | | (1.921) | | (3.600) |
| Age (years) | | 0.420 | | -0.528* | | -0.5851327 | | -0.355 | | 0.548 |
| | | (0.334) | | (0.288) | | (0.429) | | (0.338) | | (0.634) |
| Log of Income | | -2.380** | | 1.502* | | 1.361475 | | 1.810* | | 1.906 |
| | | (1.031) | | (0.889) | | (1.324) | | (1.045) | | (1.958) |
| Grown up in citytype | | 1.023 | | 0.067 | | -0.162 | | 1.000 | | 2.603 |
| | | (0.845) | | (0.728) | | (1.085) | | (0.856) | | (1.604) |
| Educational level: Fachhochschulreife | | 2.894 | | 1.961 | | 1.657 | | 1.705 | | 3.900 |
| | | (2.030) | | (1.750) | | (2.608) | | (2.058) | | (3.855) |
| Academic Bacground | | -0.614 | | -2.489 | | -4.071* | | 2.658 | | 5.513 |
| | | (1.782) | | (1.536) | | (2.289) | | (1.806) | | (3.384) |
| Migrational Backround | | 2.207 | | 2.493 | | 3.018 | | -5.290* | | -7.920 |
| | | (3.003) | | (2.590) | | (3.859) | | (3.044) | | (5.704) |
| Constant | -5.045*** | -4.013 | 9.287*** | 11.719* | 12.369*** | 17.837* | 20.216*** | 11.86529 | 38.835*** | 4.810 |
| | (0.924) | (7.333) | (0.805) | (6.324) | (1.209) | (9.422) | (1.025) | (7.434) | (1.784) | (13.928) |
| $R^2$ | 0.000 | 0.029 | 0.000 | 0.026 | 0.001 | 0.0194 | 0.000 | 0.0503 | 0.010 | 0.0460 |
| Observations | 377 | 360 | 377 | 360 | 377 | 360 | 377 | 360 | 377 | 360 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | |
| Correlation of residuals with transfer to B | 0.1858 | 0.2415 | 0.8503 | 0.8388 | 0.8831 | 0.8778 | 0.0166 | 0.0072 | 0.057 | 0.0472 |
| Breush-Pagan Test: $chi^2(1)$ | 13.016*** | 20.994*** | 272.603*** | 253.27*** | 294.033*** | 277.391*** | 0.104 | 0.019 | 1.226 | 0.801 |

Note: Specifications (1) and (2): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to B; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

Table 3.A.5b: SUR Regressions of points transferred to the trustee in TPP/R Game on the Selection

| **Dependent Variable: Transfer to B in the case** | **A0B0** | | **A50B100** | | **A100B200** | | **A50B0** | | **A100B0** | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) |
| **Dummy Variable for beeing a Police Applicant** | -1.475 | 0.839 | 0.308 | -1.514 | -0.709 | -3.403 | 4.752 | 4.175 | 5.007 | 5.337 |
| | (1.997) | (1.689) | (2.942) | (3.204) | (3.985) | (4.276) | (5.449) | (6.060) | (6.788) | (7.365) |
| **Control Variables** | | | | | | | | | | |
| Gender (1 = Female) | | -0.603 | | 3.791* | | 4.084 | | 0.163 | | -0.361 |
| | | (1.082) | | (2.052) | | (2.739) | | (3.881) | | (4.717) |
| Age (years) | | -0.052 | | -0.936** | | -0.882* | | -0.186 | | 0.343 |
| | | (0.190) | | (0.361) | | (0.482) | | (0.683) | | (0.830) |
| Log of Income | | -1.317** | | 2.465** | | 3.175** | | 0.516 | | -1.643 |
| | | (0.588) | | (1.116) | | (1.489) | | (2.111) | | (2.565) |
| Grown up in citytype | | -0.461 | | -0.392 | | -0.131 | | -1.396 | | -3.104 |
| | | (0.482) | | (0.915) | | (1.221) | | (1.730) | | (2.102) |
| Educational level: Fachhochschulreife | | 1.060 | | 1.991 | | 2.215 | | -1.955 | | -1.955 |
| | | (1.159) | | (2.198) | | (2.933) | | (4.157) | | (5.051) |
| Academic Bacground | | -0.101 | | -3.904** | | -3.857 | | -2.586 | | 0.342 |
| | | (1.017) | | (1.929) | | (2.574) | | (3.648) | | (4.434) |
| Migrational Backround | | -1.272 | | 3.729 | | 5.214 | | -4.245 | | -11.734 |
| | | (1.714) | | (3.252) | | (4.340) | | (6.150) | | (7.473) |
| Constant | 4.634*** | 14.162*** | 11.670*** | 18.767** | 13.982*** | 14.769 | -42.252*** | -35.182** | -39.030*** | -25.843 |
| | (0.682) | (4.186) | (1.005) | (7.940) | (1.361) | (10.596) | (1.862) | (15.017) | (2.319) | (18.249) |
| $R^2$ | 0.001 | 0.0255 | 0.000 | 0.0438 | 0.000 | 0.0303 | 0.002 | 0.0072 | 0.001 | 0.0139 |
| Observations | 377 | 360 | 377 | 360 | 377 | 360 | 377 | 360 | 377 | 360 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | |
| Correlation of residuals with transfer to A | 0.1858 | 0.2415 | 0.8503 | 0.8388 | 0.8831 | 0.8778 | 0.0166 | 0.0072 | 0.057 | 0.0472 |
| Breush-Pagan Test: $chi^2(1)$ | 13.016*** | 20.994*** | 272.603*** | 253.270*** | 294.033*** | 277.391*** | 0.104 | 0.019 | 1.226 | 0.801 |

Note: Specifications (1) and (2): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to A; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

Table 3.A.6a: SUR Regressions of points transferred to the trustor in TPP/R Game on the Formation

| **Dependent Variable: Transfer to A in the case** | **A0B0** | | **A50B100** | | **A100B200** | | **A50B0** | | **A100B0** | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) |
| **Policemen in Training 1st year = Benchmark** | | | | | | | | | | |
| **Policemen in Training 2nd year** | -6.904 | -5.463 | -0.657 | -1.284 | 0.441 | 0.310 | -0.788 | -0.773 | 5.804 | 5.626 |
| | (4.702) | (4.891) | (3.481) | (3.591) | (5.346) | (5.384) | (4.600) | (4.697) | (8.451) | (8.758) |
| **Policemen in Training 3rd year** | -4.673 | -3.224 | -2.145 | -0.913 | 0.864 | 3.044 | 0.532 | 1.480 | 6.907 | 6.647 |
| | (3.584) | (3.763) | (2.653) | (2.763) | (4.075) | (4.142) | (3.506) | (3.614) | (6.441) | (6.738) |
| **Control Variables** | | | | | | | | | | |
| Gender (1 = Female) | | -2.105 | | -4.569* | | -7.824** | | -6.137* | | -3.589 |
| | | (3.535) | | (2.596) | | (3.892) | | (3.395) | | (6.331) |
| Age (years) | | -0.660 | | -0.276 | | 0.138 | | -0.980** | | -1.309 |
| | | (0.501) | | (0.368) | | (0.551) | | (0.481) | | (0.896) |
| Log of Income | | 3.566 | | -0.196 | | -14.495 | | 9.657 | | 26.528* |
| | | (8.187) | | (6.012) | | (9.012) | | (7.862) | | (14.660) |
| Grown up in citytype | | 0.652 | | 1.040 | | 2.655 | | -1.450 | | 0.780 |
| | | (1.591) | | (1.168) | | (1.751) | | (1.527) | | (2.848) |
| Educational level: Fachhochschulreife | | -7.072 | | -3.969 | | -4.806 | | -1.604 | | 0.184 |
| | | (4.332) | | (3.181) | | (4.768) | | (4.160) | | (7.757) |
| Academic Bacground | | -2.937 | | -3.619 | | -1.993 | | -4.040 | | 3.993 |
| | | (3.369) | | (2.474) | | (3.708) | | (3.235) | | (6.032) |
| Migrational Backround | | 3.759 | | -1.536 | | -11.217* | | -4.747 | | -5.503 |
| | | (6.126) | | (4.498) | | (6.743) | | (5.883) | | (10.969) |
| Constant | -4.25 | -12.408 | 9.273*** | 18.298 | 10.136*** | 105.314* | 18.750*** | -16.611 | 28.773*** | -127.844 |
| | (2.866) | (55.088) | (2.121) | (40.452) | (3.258) | (60.639) | (2.804) | (52.901) | (5.151) | (98.644) |
| $R^2$ | 0.0173 | 0.051 | 0.0048 | 0.043 | 0.000 | 0.079 | 0.001 | 0.064 | 0.008 | 0.050 |
| Observations | 148 | 146 | 148 | 146 | 148 | 146 | 148 | 146 | 148 | 146 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | |
| Correlation of residuals with transfer to B | 0.1892 | 0.1904 | 0.8724 | 0.8766 | 0.9041 | 0.9101 | 0.0263 | 0.0372 | 0.0981 | 0.1057 |
| Breush-Pagan Test: $chi^2(1)$ | 5.296** | 5.293** | 112.646*** | 112.188*** | 120.976*** | 120.937*** | 0.102 | 0.202 | 1.426 | 1.630 |

Note: Specifications (1) and (2): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to B; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

Table 3.A.6b: SUR Regressions of points transferred to the trustee in TPP/R Game on the Formation

| **Dependent Variable: Transfer to B in the case** | **A0B0** | | **A50B100** | | **A100B200** | | **A50B0** | | **A100B0** | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) | (1 SUR) | (2 SUR) |
| **Policemen in Training 1st year = Benchmark** | | | | | | | | | | |
| **Policemen in Training 2nd year** | 0.302 | -0.150 | 2.407 | 0.926 | -0.003 | -1.874 | 0.962 | 1.191 | -0.400 | 0.214 |
| | (2.685) | (2.787) | (4.474) | (4.596) | (6.189) | (6.049) | (8.538) | (8.925) | (10.130) | (10.432) |
| **Policemen in Training 3rd year** | 2.931 | 3.746* | -1.862 | -0.973 | -1.119 | 0.757 | 2.487 | 1.496 | 5.420 | 2.843 |
| | (2.047) | (2.145) | (3.410) | (3.536) | (4.717) | (4.654) | (6.508) | (6.867) | (7.721) | (8.026) |
| **Control Variables** | | | | | | | | | | |
| Gender (1 = Female) | | -0.856 | | -3.214 | | -9.578** | | 2.512 | | 2.995 |
| | | (2.015) | | (3.322) | | (4.373) | | (6.452) | | (7.541) |
| Age (years) | | -0.226 | | -0.337 | | -0.244 | | -0.041 | | -0.268 |
| | | (0.285) | | (0.470) | | (0.619) | | (0.913) | | (1.068) |
| Log of Income | | 0.843 | | 3.818 | | -4.677 | | -2.583 | | 18.160 |
| | | (4.666) | | (7.694) | | (10.126) | | (14.940) | | (17.463) |
| Grown up in citytype | | 0.429 | | 1.215 | | 3.096 | | -1.768 | | -0.914 |
| | | (0.906) | | (1.495) | | (1.967) | | (2.903) | | (3.393) |
| Educational level: Fachhochschulreife | | -2.145 | | -1.741 | | -4.245 | | 3.353 | | -6.994 |
| | | (2.469) | | (4.071) | | (5.358) | | (7.905) | | (9.239) |
| Academic Bacground | | -1.666 | | -1.435 | | 0.345 | | 0.242 | | 4.162 |
| | | (1.920) | | (3.166) | | (4.167) | | (6.147) | | (7.185) |
| Migrational Backround | | -1.047 | | -4.007 | | -14.335* | | 16.431 | | 23.761* |
| | | (3.491) | | (5.757) | | (7.577) | | (11.178) | | (13.066) |
| Constant | 3.159* | 2.800 | 11.977 | -7.867 | 13.273*** | 47.416 | -37.500*** | -15.960 | -34.023*** | -154.245 |
| | (1.637) | (31.395) | (2.727) | (51.770) | (3.772) | (68.136) | (5.204) | (100.527) | (6.174) | (117.498) |
| $R^2$ | 0.017 | 0.037 | 0.008 | 0.021 | 0.001 | 0.075 | 0.001 | 0.022 | 0.005 | 0.042 |
| Observations | 148 | 146 | 148 | 146 | 148 | 146 | 148 | 146 | 148 | 146 |
| **Seemingly unrelated regression indicators:** | | | | | | | | | | |
| Correlation of residuals with transfer to A | 0.1892 | 0.1904 | 0.8724 | 0.8766 | 0.9041 | 0.9101 | 0.0263 | 0.0372 | 0.0981 | 0.1057 |
| Breush-Pagan Test: $chi^2(1)$ | 5.296** | 5.293** | 112.646*** | 112.188*** | 120.976*** | 120.937*** | 0.102 | 0.202 | 1.426 | 1.630 |

Note: Specifications (1) and (2): SURE (Seemingly Unrelated Regression) two equation model to test correllations with the transfers to A; negative values indicate stronger punishment or less reward while positive values indicate stronger rewards or less punishment; statistical significance: * p<0.10, ** p<0.05, *** p<0.01;

## 3.B Invitation letters

Figure 3.B.1: Invitation Letter for Police Applicants in Hessen

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

**Goethe-Universität Frankfurt am Main**
Fachbereich Wirtschaftswissenschaften

Prof. Dr. Michael Kosfeld
Prof. Guido Friebel, PhD

Grüneburgplatz 1
60323 Frankfurt/Main

http://www.mm.uni-frankfurt.de

Februar 2010

Sehr geehrte Bewerberin, sehr geehrter Bewerber,

im Rahmen eines aktuellen Forschungsprojekts führt die Goethe-Universität Frankfurt in Zusammenarbeit mit verschiedenen Institutionen eine Onlinestudie durch. Dabei geht es um Entscheidungsverhalten und Einstellungen von Bewerberinnen und Bewerbern verschiedener Ausbildungsberufe.

Wir möchten Sie als **Bewerber/-in für den Polizeiberuf** auf diesem Wege dazu einladen, an dieser Studie teilzunehmen. Alles was Sie hierzu benötigen, ist ein Internetzugang und etwa 20 Minuten Zeit.

Durch Ihre Entscheidungen während der Onlinestudie können Sie **mit etwas Glück Geld verdienen**. Außerdem verlosen wir unter allen Teilnehmern **drei iPod Nano**.

Um an der Studie teilzunehmen, möchten wir Sie bitten, möglichst bald unsere Webseite zu besuchen. Die Studie endet am 01.04.2011.

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Geben Sie den folgenden Zugangsschlüssel ein. Bitte beachten Sie, dass jeder Zugangsschlüssel nur einmal verwendet werden kann.

**b9qbd2AG**

Es handelt sich bei unserer Studie um eine rein wissenschaftliche Untersuchung der Goethe-Universität Frankfurt. Alle Persönlichkeitsrechte bleiben selbstverständlich gewahrt. Die Daten werden anonymisiert und ausschließlich für unsere Forschungsarbeit verwendet. **Ein Rückschluss auf Ihre Person bzw. auf Ihre Bewerberdaten bei der Polizei ist ausgeschlossen!**

**Wichtig: Bitte beantworten Sie alle Fragen und Entscheidungen in der Onlinestudie allein, d.h. ohne Absprache mit anderen Personen!**

Vielen Dank im Voraus für Ihre Teilnahme.

Prof. Dr. Michael Kosfeld

Prof. Guido Friebel, PhD

Für weitere Informationen oder Fragen wenden Sie sich bitte an:
Wiebke Homann (homann@econ.uni-frankfurt.de) oder Bernard Richter (brichter@wiwi.uni-frankfurt.de)

Figure 3.B.2: Invitation Flyer for Policemen in Training

# Chapter 4

# Selectivity and opportunism: two dimensions of gender differences in trust games and network formation

Guido Friebel
*Goethe-University, Frankfurt*

Marie Lalanne
*Toulouse School of Economics, Toulouse*

Bernard Richter
*Goethe-University, Frankfurt*

Peter Schwardmann
*Toulouse School of Economics, Toulouse*

Paul Seabright
*Toulouse School of Economics, Toulouse*

**Abstract**

We test two hypotheses, based on sexual selection theory, about gender differences in individual choices with respect to social interactions requiring investment (of time or economic resources). The differential selectivity hypothesis predicts that women invest less than men in an interaction with a new partner, other things equal. The differential opportunism hypothesis predicts that women's investment in a social interaction is less responsive to information about the likely economic payoff to that investment. Both hypotheses, if true, imply important differences in the formation of social networks by women and men. Two cohorts of a total of 363 students were matched randomly over two rounds with a partner to play a trust game. In the second round of the trust game they also had the chance to invite a new partner to play. We find evidence in favor of both hypotheses. In particular, women invest less in new partners in both rounds, and invest even less in a framing treatment that reminds them of the need to reflect on the decision. They also react less elastically to their a priori beliefs about the likely returns to their investment, and to information that is revealed at the beginning of the second round about the return to the amounts sent to their previous partner.

JEL-Classification: C91, D81, J16
Keywords: Social Networks, Gender, Experiment, Trust Game

## 4.1 Introduction

In this paper we formulate and test experimentally two hypotheses to explain observed differences between men and women in the creation and use of social networks. These hypotheses

are derived from sexual selection theory, and are broadly corroborated by empirical evidence in a range of contexts that we summarize below, but to our knowledge they have not previously been tested experimentally. The first hypothesis we call *differential selectivity*: women are more selective than men when assessing a novel partnership – they invest less in a new interaction. The second hypothesis we call *differential opportunism*: women's investment is less responsive than men's to information about the likely economic payoff to sending money to a given partner. An implication of these two hypotheses is that network structures of women and men are likely to evolve differently, with women having less wide-spread social networks than men. Even quite small differences in the way men and women respond to past interactions in determining future interactions may result in quite large differences in the network structures that evolve over time.

As we describe below, evidence for the plausibility of these hypotheses comes from a number of sources, including the biological theory of sexual selection, studies in primatology, the sociological literature on network formation and studies of economic exchange in networks. Before surveying the evidence, it is important to avoid one potential source of misunderstanding. Neither hypothesis implies that women are less economically rational than men. First, economic rationality is compatible with widely different degrees of selectivity about entering into relationships. Secondly, economic rationality is not the same as opportunism – indeed it is a well established principle in economics that too much opportunism may be damaging to economic payoffs in the long run. Individuals who are involved in long run relationships will need to invest time, effort and other resources in such relationships. Those who take such decisions entirely on the basis of their current assessment of the private returns to the various alternatives will be too opportunistic to make credible long run commitments. Those who are completely insensitive to information about the returns to the various alternatives will be too easily exploited, and will stay too long in doomed and dysfunctional partnerships, whether these are family or employment relationships, political affiliations or other intellectual and emotional attachments. Making long run relationships work requires a certain amount of opportunism, in other words, but not too much. Our second hypothesis implies that men and women tend, on average, to display different degrees of opportunism in economic interactions, but it says nothing about which type of behavior, if either, is more reasonable or leads to higher economic payoffs on average in the long run.

If indeed men and women do display such differences in selectivity and opportunism it is probably because their cognitive and emotional talents for building and managing social and economic relationships evolved in response to different challenges during our prehistory – for an account of such different challenges, see Seabright (2012, especially Chapter 4). In particular, these talents would have been shaped by natural selection in the light of the different role of long run relationships for the two sexes during the long period of our evolution.

The most plausible and intuitive account of the origins of systematic gender differences in preferences for social interactions is the theory of sexual selection. In particular, Darwin

([1871] 1981) hypothesized that females of all species would be more selective than men about undertaking sexual partnerships. Trivers (1972) located the foundations of this preference precisely in the asymmetry of parental investment made by males and females, due initially to their difference in gamete size and compounded in many animals by the asymmetric costs of gestation; females consequently make most of any subsequent investment that takes place after the birth of the offspring. Since females expect to undertake higher levels of investment overall in offspring, natural selection has led to their being more selective about encounters that may lead to offspring. Crucial to this reasoning is the notion of opportunity cost: the expected opportunity cost of any such encounter is much greater for females than for males.

In most species, males undertake little or no parental investment once fertilization has taken place, but in some species, including many birds and some mammals, there is significant paternal investment in both feeding and protection of offspring. However, such investment is likely also to be more sensitive to the presence of alternative opportunities for reproduction: a female who is involved in care of current offspring, either during or immediately after gestation, is unlikely to receive any adaptive benefit from other sexual encounters, but males may gain substantial adaptive benefits from such encounters. It is likely that males will have evolved more opportunistic responses than females to such possibilities as they arise. Sex differences in both selectivity and opportunism arise therefore in response to the same underlying asymmetry in parental investment.

The logic of sexual selection theory for both *selectivity* and *differential opportunism* might seem to apply only to sexual relationships. However, Low (2000, Chapter 10) extends the reasoning to coalition formation in general, especially in group-living primates. Social coalitions have fitness consequences for both sexes, and the consequences of individual interactions tend to be higher for females than for males because of the impact on their dependent offspring. Hrdy (2009) emphasizes the centrality of cooperative parenting in human societies, stressing that infant survival depends critically on the ability of mothers to make and sustain durable partnerships with other group members (and not just with the biological father). So the greater selectivity of females is likely to extend to general social interactions even when they are not directly likely to lead to offspring, and so is the lower degree of opportunism of females with respect to alternative opportunities to interact outside current partnerships. Striking empirical confirmation of these sex differences for primate behavior are reported in De Waal and De Waal (1990, especially p.51).

Seabright (2012) summarizes the implications of this literature for human beings, and in particular for the way in which males and females form coalitions and networks. There has been a substantial literature in sociology since Granovetter (1973) emphasizing the difference between strong and weak links in social networks, strong links being close relationships in which the partners make repeated investments of time, effort and resources, while weak links are more casual and opportunistic acquaintanceships. Paradoxically, weak links are often more useful to individuals in such contexts as job search, where the greater ability of acquaintances to

provide novel information outweighs their lesser motivation to provide support and help. There is a rich case study literature tending to support the view that women tend to have smaller social networks with fewer weak links, but problems of representativeness and selectivity make it hard to know how confident we can be in generalizing from these case studies. Friebel and Seabright (2011) provide more systematic evidence based on analysis of telephone data to suggest that men and women use different strategies of communication, consistently with their being less likely to form weak links and to communicate with casual acquaintances. Lalanne and Seabright (2011) provide evidence that such different network behavior can explain women's apparent disadvantage in the market for senior corporate appointments. It is likely that men's greater opportunism helps them in two distinct ways: men may invest more than women in sustaining weak links in their social networks, and men may be more likely than women to call in favors from their casual acquaintances when looking for new employment.

To our knowledge there has been no attempt to bring experimental evidence to bear on these questions, and this is what has motivated the study we report here. In all of the studies reported above and in Section 4.2, the formation of social networks is the outcome of both preferences and constraints – if we see men and women behaving differently it is impossible to disentangle the contribution of differences in their preferences from differences in their constraints. We have therefore devised an experiment to identify the role of gender differences in preferences. We also focus not just on play in one-shot encounters – we are interested in how subjects respond to the outcome of past interactions in deciding whether and how to interact with others in the future; it is likely that even quite small differences in response to prior interactions could be compounded into quite large differences in overall network characteristics.

Our experiment involves subjects in playing a trust game twice, and deciding after the first game how much of their endowment to invest in repeated play with the old partner and how much to invest in play with a new partner. In both rounds the subjects can choose not to play at all but to withdraw from the interaction keeping their stake. Prior to both rounds we elicit subjects' risk preferences, and at each round we elicit their subjective expectations of the amounts of money their partner will return to them.

We test for gender differences in both selectivity and opportunism and find strong evidence for both. Our main test for *differential selectivity* is very simple: it is that, other things equal, women will be less inclined to send money to a new partner, both in the first round of the game and in the second (when the money they have available to send comes out of the same endowment as that sent to the old partner). Given the evidence in the existing literature that women are more risk-averse than men, it is important to test whether the tendency of women to send less money is purely due to greater risk aversion. Thus, our hypothesis implies that they will still send less even when risk aversion is taken into account.

We also employ an additional test of selectivity that makes use of a pure framing effect. It is a common finding in the literature that women are more sensitive than men to the context in which economic experiments are played. Ellingsen et al. (2013) report that women, but

not men, cooperate substantially more in a one-shot prisoners dilemma experiment when it is framed as a "cooperation game" compared to when it is framed as a "stock market game". It seems plausible that women's greater sensitivity to framing might have emerged through natural selection given their greater likelihood of involvement in long run social relationships – the social frame would convey information about the nature and future trustworthiness of the social partners that would be more valuable to women than to men. In our experiment we implement one treatment in which, before deciding how much to send to old and new partners in the second round, subjects are reminded that they can choose whether to continue playing with the former partner, and are asked whether they wish to do so. Our hypothesis is that women, but not men, will send less to the old partner when primed with this reminder than when given no reminder.

Our test for *differential opportunism* considers behavior in both the first and second rounds of the game; the test in the second round is a more direct test of the hypothesis than the test in the first. In the first round, subjects are given no information about their partners but they can nevertheless form beliefs about how much money their partners will return. We ask subjects to report these beliefs, and we conjecture that the amount sent by women to their partners will be respond less strongly to their beliefs about how much the partners will return than will the amounts sent by men. We do indeed find such an effect, but one possibility is that it might be related to different degrees of confidence. It is well established in the literature that men display higher degrees of confidence in their judgments than women (Barber and Odean, 2001), so the greater tendency to send money to partners of whom one has high expectations might just reflect this greater confidence. However, in the second round we test for differences in the amount sent by women and men to old partners as a function of the rate of return to the amounts sent in the first round, and again we find women's amounts sent are much less sensitive to the rate of return than are men's, which corroborates the *differential opportunism* hypothesis. If the explanation for apparent differential opportunism in the first round were purely differences in confidence about their judgments of the likely amount returned, these differences would become weaker or disappear altogether in the second round as hard evidence became available about the actual reciprocity of the partners. In fact, as will be seen, gender differences in response to this evidence become stronger, not weaker, with respect to the differences observed in the first round. This supports the *differential opportunism* hypothesis against the alternative of differential self-confidence.

To summarize, we conjecture that natural selection has given men and women psychological mechanisms for assessing relationship behavior that will result in similar differences with respect to other, non sexual partnerships; we therefore predict that women will be more selective about undertaking them and less opportunistic about investing resources in them once undertaken. We do not know whether these differences will be as strong for non-sexual relationships as for sexual relationships, nor whether, for non-sexual relationships, they will be as strong for intra-gender relationships as for inter-gender relationships, and we do not believe the existing

literature permits clear predictions on these points. Nevertheless, we implement a treatment in which the gender of existing partners is revealed to subjects and report certain differences according to both the gender of the subject and the gender of the partner.

The remainder of the paper organizes as follows. Section 4.2 provides an overview on the literature on trust games as well as gender differences and considerations on risk in these games. Section 4.3 describes the experimental setup and the participants of the study. Finally, the results and the links to our formerly stated hypotheses are elaborated in Section 4.4. The paper concludes in Section 4.5 and gives a brief discussion on possible extensions of the analysis.

## 4.2 Literature Review

Our experimental test of these two hypotheses draws the well understood and widely accepted experimental framework of the trust game. Two individuals play the following game: the proposer has a certain endowment and will decide how much of this endowment to send to the receiver. The amount sent will be multiplied by some number by experimenters and the receiver will then have to decide how much to transfer back to the proposer. The amount sent by the proposer can be interpreted as a measure of trust; the amount sent back by the receiver can be interpreted as a measure of trustworthiness or reciprocity.

The trust game was introduced by Kreps (1990) and first experimentally tested by Camerer and Weigelt (1988), according to Croson and Gneezy (2009). In Kreps' version, decisions were binary: the first mover has the choice between sending all or none of endowment and the second mover has the choice between returning half or none of the tripled amount. Berg et al. (1995) and Van Huyck et al. (1995) introduced more continuous versions of the game.

With respect to gender differences in trusting and reciprocal behavior, we rely on Croson and Gneezy (2009)'s review of 20 studies of gender differences in behavior in trust games. There are experiments revealing no gender differences (e.g. Croson and Buchan, 1999; Clark and Sefton, 2001; Cox and Deck, 2006; Bohnet, 2007; Schwieren and Sutter, 2008; Bohnet et al., 2006; Bonein and Serra, 2009; Chaudhuri et al., 2013; Eckel and Petrie, 2011). There are also studies reporting a distinct gender effect, with some claiming that men trust more (e.g. Eckel and Wilson, 2004; Snijders and Keren, 2001; Chaudhuri and Gangadharan, 2007; Buchan et al., 2008; Migheli, 2007; Innocenti and Pazienza, 2006; Slonim and Guillen, 2010; Garbarino and Slonim, 2009; Ben-Ner and Halldorsson, 2010; Fiedler et al., 2011; Slonim and Garbarino, 2008) and fewer concluding that women are more trusting (Bellemare and Kroger, 2003). Furthermore, Croson and Gneezy (2009) present some evidence that women are more sensitive to the experimental context, a factor that may account for these contradictory results.

It is possible that trust decisions are driven in part by risk aversion; women are known to be on average more risk averse than men. However, the majority of papers have found no effect of risk aversion on trust decisions (e.g. Eckel and Wilson, 2000; Eckel and Wilson, 2004; Slonim

and Guillen, 2010; Ben-Ner and Halldorsson, 2010; Houser et al., 2006)[1]. Only two papers to our knowledge have found that risk aversion affects trust (see Schechter 2007 and Kanagaretnam et al. 2009[2]). This evidence seems to suggest that risk aversion is unlikely to be driving observed gender differences in trust. Nevertheless, we still control for risk aversion in our experiment and report results using this control variable.

The literature on partner selection in experiments is limited. Only four experiments on trust games allow for the active selection of interaction partners. Eckel and Wilson (2000) allow subjects to choose between two partners labeled with facial icons. They found that subjects prefer friendly partners and trust more than in a similar game without partner selection. Slonim and Garbarino (2008) and Slonim and Guillen (2010) allow subjects to choose between partners identified by their gender and age, and by their gender and a score at an addition task, respectively. They also found that selection significantly increases trust.

Finally, Fiedler et al. (2011) report a design that is more closely related to ours. Subjects had the possibility to engage in ten minutes of virtual communication (via computers using a text-messaging window) before playing a trust game. The subject in the role of proposer then had the choice between playing a trust game with the subject with whom he had the virtual communication or with another subject with whom he had no previous interaction at all. The authors found that subjects are more likely to choose the socially closer partner (the one with whom they virtually communicated) and that the latter is more likely to send back more than a socially distant partner.

Our work differs from these experiments as we do not allow for prior communication between partners, and we allow subjects to play with both partners rather than constraining them to choose only one. Furthermore, we give subjects different information on the potential partners, namely information on their behavior in a similar game they will play again. All the previous experiments provide only information on potential partners that is not directly related to the trust game (facial icons chosen by potential partners, demographic characteristics such as age and gender, ability in a task unrelated to the game they will play, information from virtual communication potentially reducing social distance between proposer and receiver). Indeed, we are interested by how some previous interaction affects the next interaction between two individuals, with a focus on how this differs between men and women. Thus, we want to investigate the extent to which the outcome of a first interaction affects the next interaction with the same individual and the next interaction with another unknown individual. This question is of interest for understanding how men and women form their networks, and specifically for casting light on differences in the size and composition of those networks.

[1]Eckel and Wilson (2000) found that risk aversion affects the decision whether to engage in more or less risky trust games, but does not significantly affect the amount sent as a trustor

[2]Kanagaretnam et al. (2009) report that risk aversion affects trust only in the only of individuals who have neither "strongly pro-social nor pro-self social value orientations".

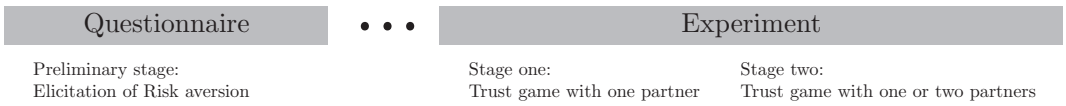
## 4.3 Experiment

### 4.3.1 Design

In order to test the two hypotheses, we designed a study that includes the elicitation of risk aversion in a questionnaire and is followed by an experiment two weeks later in which a trust game is played twice. In stage one of the experiment we first use exogenous pairwise matching between two partners to elicit trust game decisions with one partner. Finally, in the second stage we allow the individuals in the experiment to chose their partners. More specifically, they may chose between playing with the previous partner, a new partner, or both the previous partner and a new partner.

The timing of the overall study design is presented in Figure 4.3.1. Detailed description is provided in the following section.

Figure 4.3.1: Timing of the study




**Preliminary Stage – Questionnaire and Risk elicitation** In this preliminary stage we make use of a questionnaire to elicit personal characteristics, as well as the willingness to take risks. The sequence of questions can be found in the Appendix 4.B.

To elicit the willingness to take risks, we made use of the lottery setting presented in the work of Holt and Laury (2002)[3]. Subjects are presented ten choices of paired lotteries and were asked to decide between an Option A and an Option B in each. The payoffs for Option A, 20 EUR and 16 EUR, are less variable than the potential payoffs of 38 EUR and 1 EUR in the "risky"Option B[4]. In the first decision, the probability of the high payoff for both options is 1/10, so only extreme risk seekers would choose Option B. When the probability of the high outcome increases enough (moving down the table), a person should cross over to Option B. Even the most risk-averse person should switch over by the tenth decision, since Option B yields a sure payoff of 38 EUR. Thus, the switching point is a measure for the risk aversion of the participants. After completing the questionnaire, we randomly chose participants[5] to roll a ten-sided dice in order to chose the payoff relevant decision. Depending on their chosen Option

[3]The sequence of lottery decisions can be found in Appendix 4.B.

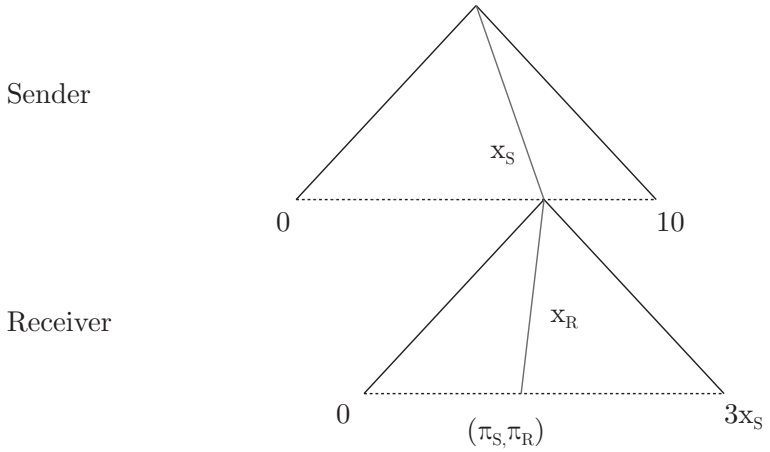
[4]We adjusted the stakes to be ten times as high as in the original options presented by Holt and Laury (2002), since we only chose a few participants to receive their actual payoff. We assume this linear transformation of the payoff makes no difference in terms of risk aversion.

[5]In the first wave we chose three participants in each of the eight questioned groups. In the second wave we provided each participant a show up fee of 5 EUR and selected only one per group, eight groups in total again, to receive his actual payoff.

in this decision, A or B, subjects had to roll the dice a second time to determine their actual payoff.

**Stage one – Trust game with one partner** The subjects who participated in the preliminary stage were invited to an experiment at the FLEX[6] two weeks later. In this stage, subjects were randomly assigned in groups of two and played a trust game in the sense described in Section 4.2. The decision tree for all players is presented in Figure 4.3.2.

Figure 4.3.2: Trustgame




First, each subject is endowed with 10 points[7] and decides in the role of a sender how much of this he wants to allocate to his partner, the receiver. Each point allocated is tripled by the experimenter. Next, the receiver decides upon the back transfer to the sender. Payoffs $\pi_i$ for subjects in this stage were precisely

$$\text{for the sender: } \pi_S = E_S - x_S + x_R \tag{4.1}$$

$$\text{for the receiver: } \pi_R = 3x_S - x_R \tag{4.2}$$

where $E_S$ denotes the endowment of the sender and $x_i$ the transfers of the players, with $i \in \{S, R\}$.

We made use of the strategy method to elicit the back transfer of the receiver. More precisely, we asked the receiver how much he/she was willing to back transfer conditional on the transfer from the sender[8]. Overall, subjects played two trust games simultaneously with each partner: one in which they were in the role of the sender and the other one in which they were in the role of the receiver[9].

[6]Frankfurt Laboratory for Experimental Economics.

[7]Transfers in the experiment are denoted in points with an exchange rate of 1 point = 0.1 EUR.

[8]The strategy method, first described by Selten (1967), allows the collection of additional data without significantly disturbing the results. For an extensive discussion on the usage of the strategy method in experiments see Brandts and Charness (2000) among others.

[9]The presented experimental instructions can be found in Appendix 4.C. The sequence of experimental screens is shown in Appendix 4.D.

After the elicitation of the transfers in the trust game we asked the subjects to state their beliefs about the back transfer of their partner in the role of the receiver. We incentivized this step by linking their beliefs to the actual realized behavior. The closer their guess of the back transfer was the greater the additional payoff subjects could earn[10].

**Stage two – Trust game with one or two partners** The second stage followed the trust game and gave subjects the possibility to play again with the previous partner and/or a new partner. Therefore subjects were matched in groups of three. Each subject first decided in the role of the sender if he/she wanted to keep the endowment of 10 points or to allocate points to the old and/or the new partner. Both transfers, to the old partner and to the new partner, were again tripled by the experimenter. In the role of the receiver, subjects now had to choose how much they wanted to back transfer to the old partner as sender or the new partner as sender. Payoffs $\pi_i$ for subjects in this stage were precisely

$$\text{for the sender: } \pi_S = E_S - x_{S_{Old}} - x_{S_{New}} + x_{R_{Old}} + x_{R_{New}} \tag{4.3}$$

$$\text{for the old receiver: } \pi_{R_{Old}} = 3x_{S_{Old}} - x_{R_{Old}} \tag{4.4}$$

$$\text{for the new receiver: } \pi_{R_{New}} = 3x_{S_{New}} - x_{R_{New}} \tag{4.5}$$

where $E_S$ denotes the endowment of the sender and $x_i$ the transfers of the the players, with $i \in \{S_{Old}, S_{New}, R_{Old}, R_{New}\}$.

We elicited the back transfers of the subjects in the role of the receiver using the strategy method for the old partner as sender and the new partner as sender separately. Furthermore, we asked subjects about their beliefs about the back transfers of their old partner as receiver and their new partner as receiver. The incentives used for the belief elicitation were the same as in stage one.

The choice by players whether to play with the same partner, with a new partner or with both will reveal the nature of preferences for coalition formation, as well as the dependence of these preferences in the history of previous interaction. We expect that women will be less willing to send money again (following the *differential selectivity* hypothesis). Furthermore, if women do send money again, we expect this to be less influenced by their old partners back transfer from the first stage, than it would be for men (following the *differential opportunism* hypothesis).

**Treatments** For the laboratory experiment we consider four treatment variations. Each subject played the stages one and two only in one treatment (between-subjects experiment). Screens of transfer decisions for all treatments are provided in Appendix 4.D.

[10]If the guess of the back transfer was precisely the amount back transferred subjects earned 8 additional points. If the guess was inaccurate by 2 (4) points subjects received 4 (2) additional points. Finally, all guesses that varied by more than 4 points gained no additional points for the subject.

1. **NoVar** – This is our baseline treatment. In stage one of the experiment subjects simultaneously play two trust games, first in the role of a sender and thereafter as a receiver. In stage two, this trust game is extended by a randomly assigned anonymous new partner. No additional information upon the partners were given to the subjects.

2. **RG** – This is the revealed gender treatment. Subjects in this treatment simultaneously play the two trust games in stage one. In the second stage they face the extended trust game with the old partner and a new partner. Again they play in the role of a sender as well as in the role of a receiver. Additionally, before choosing their transfer as trustor in this stage they receive information about the gender, age and year their partners started their studies.

3. **T1** – This is the threshold of 1 treatment. Subjects in this treatment simultaneously play the two trust games in stage one. In the second stage they face the extended trust game with the old partner and a new partner. Again they play in the role of a sender as well as in the role of a receiver. Before they could chose their transfers, they have to state whether they want to play with the old and/or the new partner or none of them. If they wanted to play, they had to invest at least one point for transfer to the receiver. Subjects got no further information about the characteristics of their counterparts.

4. **T1RG** – This reassembles the revealed gender and the threshold of 1 treatment. Subjects in this treatment simultaneously play the two trust games in stage one. In the second stage they face the extended trust game with the old partner and a new partner. Again they play in the role of a sender as well as in the role of a receiver. Before they could chose their transfers, they have to state whether they want to play with the old and/or the new partner or none of them. If they wanted to play, they had to invest at least one point for transfer to the receiver. Additionally, before choosing their transfer as trustor in this stage they receive information about the gender, age and year their partners started their studies.

Sexual selection theory does not make clear predictions as to the influence of knowing the partner's gender on the behavior of subjects, especially for women. Previous works have found mixed results: Buchan et al. (2008) found no effect of partner's gender on either trust or reciprocity; Garbarino and Slonim (2009) and Slonim and Guillen (2010) found that gender affects trust, with subjects sending more to the opposite gender partner; Bonein and Serra (2009) found that only reciprocity is affected by gender, with reciprocity being higher between same gender partners.

The T1 treatment is simply a framing treatment. From a rational point of view, the game played in the NoVar treatment and in the T1 treatment are equivalent and should lead to the same behavior of subjects. We expect to see some difference in subjects' behavior between the NoVar treatment and the T1 treatment, mainly for women, in light of the *differential*

*selectivity* hypothesis. In fact we expect that, when being reminded if they want to play with a partner, females will be more cautious and will send less money if they decide to play with a partner. The fact that females will react differently between the NoVar treatment and the T1 treatment, while males will not, has been highlighted by Croson and Gneezy (2009). They argue that women's behavior might be more sensitive to the experimental context, and thus lead to mixed results in experiments on gender. This argument was already made by the sociologist Gilligan (1982), who noted that women's behavior is more context-dependent than men's one. This makes sense in the light of sexual selection, given that women's relationship behavior in the evolutionary setting would have had greater long term consequences than that of men, and contextual information may be relevant to an evaluation of those long term consequences.

### 4.3.2 Procedure

We conducted the study in two waves with students of the Goethe-University Frankfurt in their very first days at the university. In fact, we ran the preliminary stage in the introductory week of the department of economics. This introductory week is organized by senior students[11], lasts in total three days and gives the new students the possibility to become familiar with the campus and the university. On the second day of this introductory week we organized an information event were we provided an overview of the research in the faculty and asked students to participate in our study.

Since our study consisted of two parts, the questionnaire in the information event and the laboratory experiment, students first received a unique id and cover letter, in which the details of the study were presented. We asked them to fill in their contact details and collected the cover letters afterwards. Next, students were handed the questionnaires presented in Appendix 4.B. Collecting and storing the cover letters and the questionnaires separately assured the students a high level of anonymity[12].

In total, our participant pool consists of two cohorts of students. The first cohort was questioned in the summer term 2012, and the second cohort in the winter term 2012/13. In total, 328 (467) students registered to participate in the first (second) introductory week. Out of this population we were able to get 267 (436) questionnaires resulting in a participation rate of 81.4 (93.4) percent, which represents almost the complete population of students in their very first year. We used different incentive schemes for the questionnaire in the second wave to increase the participation rate in the experiment later on. In the first wave we chose 24 subjects to receive their actual payoff of the Holt & Laury lottery[13]. On average, students earned 25.1 EUR. For the second wave we provided 5 EUR for every questionnaire participation and chose

[11]Further information on the introductory week as well as the schedule can found on the website of the Goethe-University Frankfurt

[12]Using the unique id on cover letters and questionnaires we were able to link the results with the behavior in the experiment.

[13]Following the method of risk elicitation by Holt and Laury (2002).

in total eight students to receive their actual lottery payoff. Subjects on average earned 25.6 EUR.

Two weeks after the introductory week, we contacted the students using the contact details provided on the cover letter and invited them to our laboratory experiment at the FLEX. In total, 128 (235) students of the first (second) wave participated in our experiment. We were able to determine matching questionnaires and experiment decisions of 102 (193) students in total, comprising 38.2 (44.3) percent of the students that participated in the questionnaire. This corresponds to 295 complete observations and a total participation rate of 42.0 percent. Subjects in the first (second) wave of the experiment earned on average 12.8 EUR (11.8 EUR) for around an hour.

The personal characteristics of all subjects who participated in the experiment can be found in Table 4.A.1 in Appendix 4.A. 44 percent of all participants were females and the average age is 20.5 years. 55 percent originate from the Rhein-Main area. While we find that men and women differ in their stated social networks, we do not find any differences in their willingness to take risks in terms of two risk elicitation methods, the direct question and the Holt & Laury Lottery. There are some gender differences in the reported distribution of their friends. Men report an average of 28.6 real friends while women report an avereage of 18.9, but the difference is not significant (Mann-Whitney U-Test: p-value=0.598, two-sided). If we now look at the distribution of friends on Facebook[14], we find the opposite. Women state to have on average 382.58 Facebook friends while men indicate to have 318.19 on average. This difference is significant on the 1 percent level (Mann-Whitney U-Test: p-value=0.034, two-sided).

In total, we consider the following distribution among our treatments: 58 subjects participated in our baseline treatment (NoVar); 102 subjects in the revealed gender (RG); 94 subjects in threshold of 1 treatment (T1); and finally we consider 109 subjects to participated in the revealed gender and threshold of 1 treatment (T1RG). We therefore consider the experimental results of 363 subjects for our following analysis[15].

## 4.4 Results

### 4.4.1 Women are more selective than men

Hypothesis 1 says that women are more selective than men when assessing a novel partnership; in other words, they will invest less in a new partner. As a consequence, we expect them to send less money than men to their partners when they play as first movers in trust

[14]Since the complete organization of the introductory week at the Goethe-University Frankfurt is achieved via a fanpage on the popular social network Facebook, we consider almost all of the students to have an account on this platform. Thus, we take this as an additional indicator, assuming that the contacts stated in the questionnaire consists mainly of friends prior their student phase and only of some new friends during the first days.

[15]Note that due to the matching of experiment decisions and the answers in the questionnaire some variables may be missing.

games. In our case, this would both apply for the amount sent to the partner in the first stage and for the amount sent to the new partner in the second stage. Figure 4.4.1 provides these comparisons.

We observe that for both the amount sent in the first stage and the amount sent to the new partner in the second stage, females indeed send less money compared to males, a difference that is significant at the 1 percent level ($t = 3.225$ and $p = 0.001$ for the t-test on amount sent in the first stage and $t = 2.696$ and $p = 0.007$ for the t-test on amount sent to the new partner in the second stage). As averages might hide some important gender differences in the distribution, we plot the entire distribution in Figure 4.4.2.

This figure shows that the variance in amounts sent by males is higher than the one of females, with standard deviations of 3.36 for males and 2.43 for females. In particular, males are much more likely to send the whole endowment to their partner (this is true of 8.1 percent of males and only 2.6 percent for females). One explanation for the observed gender difference in amounts sent might be gender specific differences in risk aversion. However, in our sample, males and females do not differ in terms of risk aversion (the average switching point in the Holt and Laury test being 5.764 for males and 5.809 for females; $t = -0.295$ and $p = 0.768$). Furthermore, in the econometric analysis below, the risk aversion variables are not significant in explaining the amounts sent by subjects.

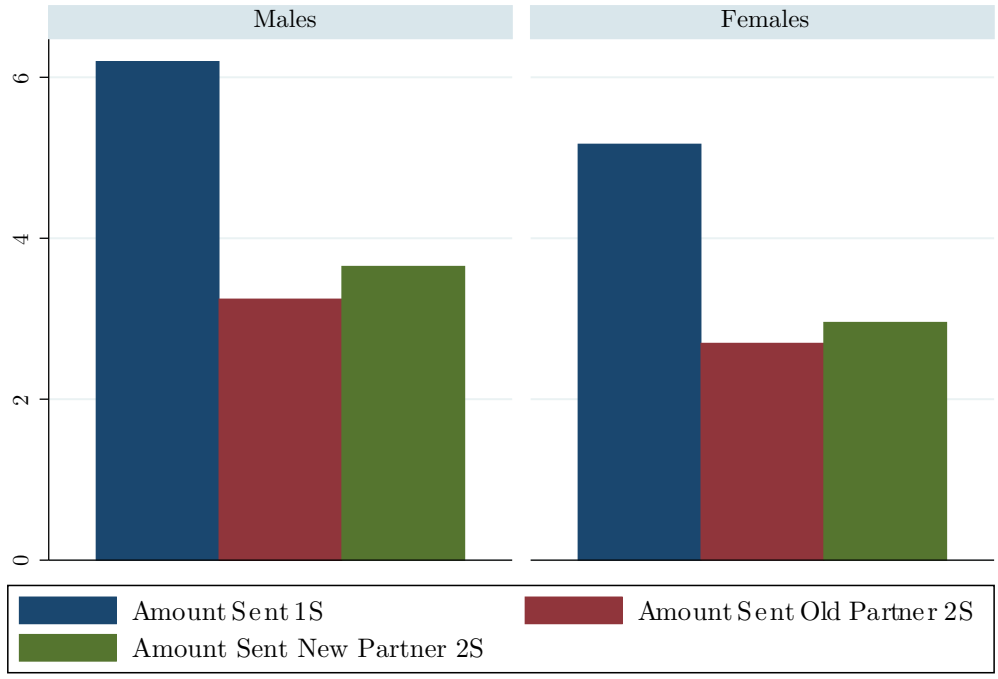
Figure 4.4.3 shows the distribution of the amount sent to the new partner in the second stage. This decision is subject to a different budget constraint than the decision on the amount to be sent in the first stage. For the second stage, an individual needs to decide how much to send to the old partner versus to a new partner. In addition, individuals may have different experiences with their partners in the first stage, which again might affect their behavior. Hence, it is not surprising that fewer individuals send the entire endowment, but differences between males and females are still remarkable. The variance in amounts sent by males is again higher than the amounts sent by females, with standard deviations of 3.65 for males and 2.96 for females. Notice also that there are many more men than women sending 5 points to the new partner.

The evidence presented here seems to be in line with Hypothesis 1: women are more selective than men when entering a new partnership. They are more cautious and send lower amounts to their partners.

### 4.4.2 Women are less responsive to information about the likely economic payoff

According to Hypothesis 2, women's investment is less responsive than men's to information about the likely economic payoff to sending money to a given partner. In the first stage, subjects have no information about their partner. In the second stage, subjects do have information about their old partner's behavior in the first stage. This information is relevant for subjects'

Figure 4.4.1: Average amount sent by gender




Graphs by Gender stated in the Experiment

Figure 4.4.2: Distribution of amounts sent by gender in the first stage

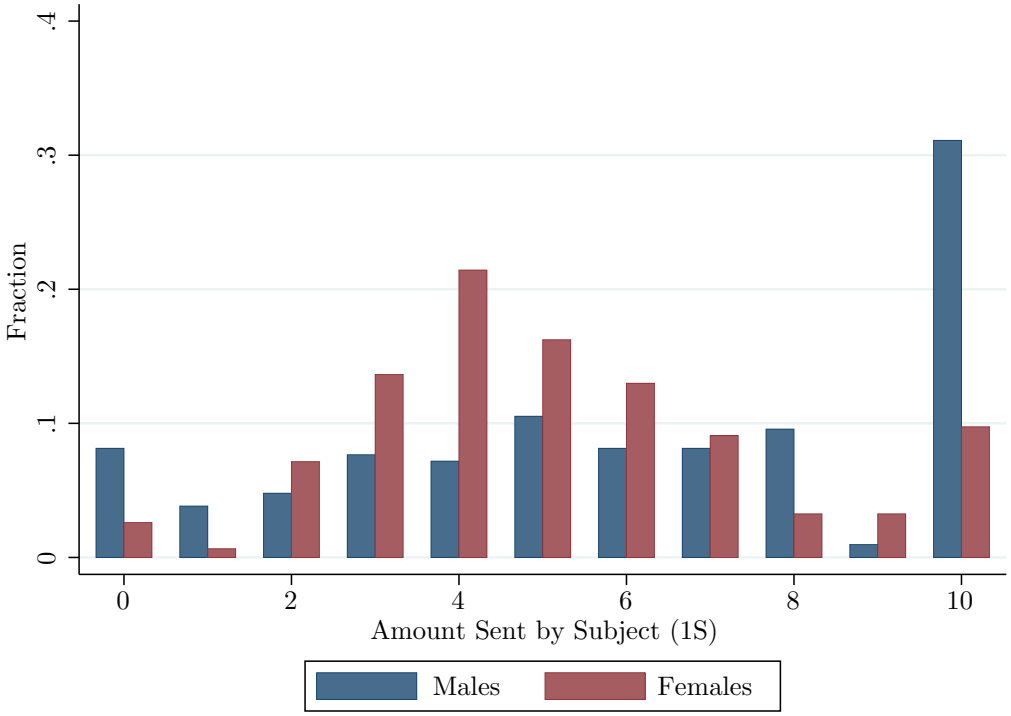


Figure 4.4.3: Distribution of amounts sent by gender in the second stage to new partner

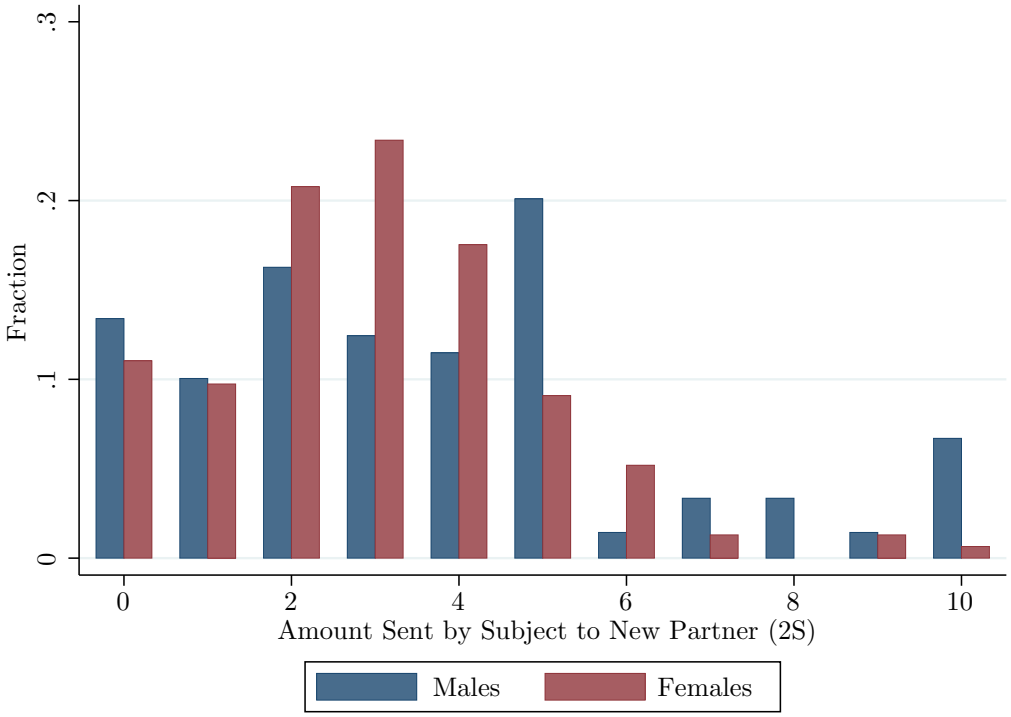
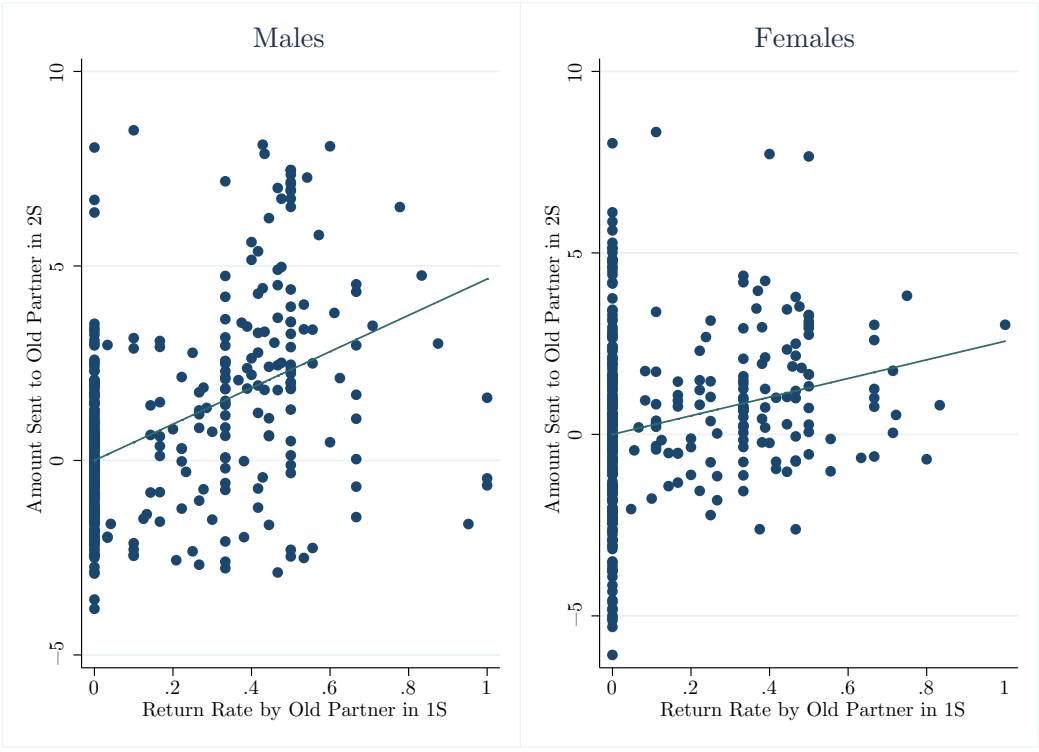



Figure 4.4.4: Component plus residual plot of amount sent to old partner in second stage on return rate by old partner in first stage



potential payoffs when playing again with the partner. More precisely, they know how much their partner sent as a trustor and they also know how much they received back form their partner as a trustee (recall that every subjects play both roles). These two data points provide information about how trusting and how trustworthy the old partner is. In principle, the partner's trustworthiness is the information most relevant to judging the likely returns from sending money to the partner a second time. In accordance with Hypothesis 2, we expect that females will react less strongly than males to this information in their decision to play again with the old partner in the second stage. However, we control also for information about the old partner's trustingness, which may induce a reciprocating response (though Hypothesis 2 does not predict any gender differences in this response).

Figure 4.4.4 shows the partial correlation between the amount sent to old partners by subjects in the second stage, and the return rate of the old partner in the first stage, in a regression that also controls for other explanatory and control variables. The variable return rate is defined as the amount the partner returned divided by the amount sent to the partner. It is a better way to measure reciprocity than simply taking net amounts returned. In Figure 4.4.4, we plot the residuals of this regressions with the respective point estimates as a slope of the regression line. This relation is positive for both males and females, but the slope is lower for females than for males. The residuals for males also have higher variance than those for females. Overall, this seems to be prima facie evidence of Hypothesis 2: females are less responsive about the likely economic payoff to an investment. We further explore both hypotheses through a more rigorous econometric analysis.

### 4.4.3 Econometric Analysis

We mainly focus on amounts sent by subjects in both stages, as we are interested in the potentially different ways males and females invest in social interactions. For completeness, the regressions on amounts returned are included in the Appendix. We use Tobit analyses as our dependent variables will be censored (the amounts sent by subjects are necessarily comprised between 0 and 10).

Risk aversion is measured in three different ways in our study. The first risk aversion variable is the switching point from the Holt and Laury (2002) test. The second risk aversion variable is the chosen number from a scale from 1 (not prepared to take risks at all) to 10 (very prepared to take risks) from the questionnaire. Finally, the third risk aversion variable is the chosen lottery from the Eckel and Grossman (2008) test. Regressing the dependent variables (transfers to new partners in the first and second stage, and to the old partner in the second stage) on the different measures of risk aversion, we find risk aversion to be statistically nor economically significant. As a consequence, we drop them from the further regressions. The regression results can be found in the Appendix, in Tables 4.A.2, 4.A.3, 4.A.4 and 4.A.5.

For the first stage, we estimate the following general model:

$$\begin{aligned} Amount\_Sent = \alpha_0 &+ \alpha_1 * Female + \alpha_2 * Optimism \\ &+ \alpha_3 * Optimism * Female + \epsilon \end{aligned} \tag{4.6}$$

For the second stage, we use the same explanatory and control variables for the amounts sent to old and new partners. We estimate the following general model:

$$\begin{aligned} Amount\_Sent\_Stage2 &= \beta_0 + \beta_1 * Female + \beta_2 * Optimism + \beta_3 * Optimism * Female \\ &+ \beta_6 * Own\_Amount\_Sent + \beta_7 * Partner\_Return\_Rate \\ &+ \beta_8 * Partner\_Amount\_Sent + \beta_9 * Partner\_Return\_Rate * Female \\ &+ \beta_{10} * Partner\_Amount\_Sent * Female + \beta_{101} * RG\_Treatment \\ &+ \beta_{12} * RG\_Treatment * Female + \beta_{13} * T1\_Treatment \\ &+ \beta_{14} * T1\_Treatment * Female + \eta \end{aligned} \tag{4.7}$$

The variable *Female* takes the value 1 if the subject is female. The variable *Optimism* measures the senders' beliefs about the amounts that their partner will send back for any possible amount the partner may have received (more precisely, it represents the slope of the linear regression of expected amounts returned on possible amounts sent). The interaction between *Optimism* and *Female* measures the difference between women and men in how beliefs influence the amounts sent. We included the variable *Own_ Amount_ Sent* in the stage 2 regressions to capture the heterogeneity in amounts sent by subjects in stage 1, as this may represent otherwise unobserved heterogeneity in generosity or altruism. In order to investigate the effect of the partner's behavior in the first stage on subjects' behavior in the second stage, we include the variables *Partner_ Return_ Rate* and *Partner_ Amount_ Sent* and their interacted terms with the *Female* variable. Finally, we include dummy variables for the different treatments we implemented. The variable *RG_ Treatment* is equal to 1 if the partner's gender was revealed to subjects (and 0 otherwise). The variable *T1_ Treatment* takes the value 1 if the subjects were assigned to the threshold 1 treatment (and 0 otherwise). We also include the interacted terms *RG_ Treatment*Female* and *T1_ Treatment*Female* to investigate whether males and females react differently to treatments. The estimation results of equations 4.6 and 4.7 are presented in the following tables.

Table 4.4.1: Evidence for Hypothesis 1

| **Dependent Variable:** | **Amount Sent First Stage** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to NEW Partner (second stage)** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to NEW Partner (second stage)** |
|---|---|---|---|---|---|
| **Independent Variables** | I | II | III | IV | V |
| Female | -1.451*** | -0.406 | -0.739** | 0.649 | -0.702 |
| | (0.434) | (0.363) | (0.305) | (0.684) | (0.570) |
| Threshold 1 Treatment | | | | 0.561 | -0.166 |
| | | | | (0.468) | (0.388) |
| Threshold 1 Treatment*Female | | | | -1.525** | 0.150 |
| | | | | (0.702) | (0.586) |
| Revealed Gender Treatment | | | | 0.175 | -0.214 |
| | | | | (0.459) | (0.380) |
| Revealed Gender Treatment*Female | | | | 0.126 | 0.305 |
| | | | | (0.703) | (0.586) |
| Controls | No | No | No | Yes | Yes |
| LR Chi$^2$ | 11.11 | 1.24 | 5.80 | 33.58 | 43.87 |
| Observations | 363 | 363 | 363 | 363 | 363 |

Note: Consored Tobit regression; standart errors in parentheses; controls include subject's amount sent in stage 1; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

**Hypothesis 1** Table 4.4.1 summarizes the results. In line with Hypothesis 1, we find that females send less to the partner in the first stage (Table 4.4.1, first specification). Similarly, they send less to new partners in the second stage (Table 4.4.1, third specification). The amount sent to old partners is not statistically significant for females (Table 4.4.1, second specification). Finally, the fourth specification in Table 4.4.1 shows that the coefficient on the threshold 1 treatment variable is not significant, so the treatment does not affect the amount sent by males to their old partner in the second stage. On the contrary, the coefficient on the threshold 1 treatment interacted with the Female variable is negative and significant, meaning that females do react differently to this treatment compared to males and send less money to their old partner in the second stage.

**Hypothesis 2** Hypothesis 2 states that women are less responsive than men to information about the likely economic returns to an investment in a partner. In stage 1, subjects do not have much information about the likely economic returns of investing in their partner. Still, they can form beliefs about the trustworthiness of the partner, and we elicit these beliefs during the experiment. The optimism variable is a good measure of the *a priori* subjects have with respect to their partner. According to Hypothesis 2, we expect males to react more to optimism than females in their decision to send money to their partner. In the first specification of Table 4.4.2, we observe that the optimism variable does affect the amounts sent by subjects to their partner in the first stage. In other words, the higher subjects' optimism, the higher the amount sent to the partner. We also observe that the optimism interacted with the female variable is negative, leading to a coefficient for optimism for females to be much lower than for males (1.703 for males and 0.497 for females). We interpret this finding as evidence of females reacting less strongly to the information they have on the likely returns of the investment. This difference, though economically important, is not statistically significant at conventional levels. However, there is a large and clearly significant difference in the responsiveness of male and female subjects to the return rate of the old partner, and this latter is comparatively hard evidence (compared at least to the beliefs we elicit at the first stage).

Table 4.4.2: Evidence for Hypothesis 2

| **Dependent Variable:** | **Amount Sent First Stage** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to NEW Partner (second stage)** |
|---|---|---|---|---|
| **Independent Variables** | I | II | IV | V |
| Female | 0.090 | 1.247 | 2.203* | -1.775* |
| | (1.083) | (1.087) | (1.191) | (1.041) |
| Optimism | 1.703*** | 0.718* | 0.702* | 0.896*** |
| | (0.504) | (0.413) | (0.379) | (0.325) |
| Optimism*Female | -1.206 | -0.483 | -0.566 | -0.395 |
| | (0.759) | (0.617) | (0.564) | (0.498) |
| Partner's Return Rate | | | 6.749*** | -2.244*** |
| | | | (0.994) | (0.853) |
| Partner's Return Rate*Female | | | -3.226** | 1.178 |
| | | | (1.497) | (1.315) |
| Partner's Amount Sent | | | 0.172** | -0.158** |
| | | | (0.072) | (0.063) |
| Partner's Amount Sent*Female | | | -0.012 | 0.229** |
| | | | (0.109) | (0.095) |
| Controls | No | Yes | Yes | Yes |
| LR Chi$^2$ | 23.22 | 38.86 | 107.68 | 71.39 |
| Observations | 363 | 363 | 363 | 363 |

Note: Consored Tobit regression; standart errors in parentheses; the variable Optimism measures the senders' beliefs about the amounts that their partner will send back for any possible amount the partner may have received. We approximated linearly senders' beliefs and computed the corresponding slope to obtain the optimism variable for each subject; controls include subject's amount sent in stage 1 and treatment dummy variables; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Could other gender differences (analogous to difference in risk aversion) be at the root of these findings? Two alternative explanations suggest themselves: 1) females might be less able to predict the amount that will be returned by the partner and 2) females might be less confident in their evaluation of this amount. Statistics on optimism and actual amounts returned show that the first of these alternatives is incorrect. The average difference between subjects' beliefs and actual partners' amounts returned is 0.732 for males and 1.201 for females, and this difference is not significant. Males and females are equally able to predict what the partner will return to them. We can also reject the suggestion that the differences are due to differential confidence in the predictions of men and women: if this were so, there should be much less difference in men's and women's responsiveness to actual returns in the first stage than to beliefs in that stage, since the former are based on hard evidence while the latter are purely conjecture. In fact, as we can see, the gender difference are more pronounced for actual returns than for beliefs. Overall therefore, the evidence from both stage 1 and stage 2 is consistent with Hypothesis 2.

## 4.5 Discussion and Conclusion

Are there differences in the way men and women create social networks? And if yes, what could explain these differences? Based on theories of sexual selection, we have proposed two hypotheses. These are, first, the hypothesis of *differential selectivity*: women invest less than men in a new interaction; and second, the hypothesis of *differential opportunism*: women's investment in a social interaction is less responsive to information about the likely economic payoff to that investment. Testing both hypotheses on two cohorts of a total of 363 undergraduate students of the Goethe-University Frankfurt, we found that women send less to new partners in trust games. This holds for both a first and a second round that individuals play. In the second round, women are also less likely to invite new partners and this effect is enforced when the decision to engage with a new partner is made more salient. These results are consistent with the hypothesis that women are more selective than men. The amounts they send are less sensitive than men's to expectations in the first round about the likely returns, and less sensitive in the second round to evidence about the partner's previous degree of reciprocity, which is in line with the *differential opportunism* hypothesis. Gender differences in the second round are greater than those in the first round, which is evidence against the alternative hypothesis that these differences are due to differential self-confidence. We also find no evidence that risk aversion can explain the differences. To investigate whether the differences found in the lab are reflected in the formation of real social networks is the next step in this research project. A large number of the students revealed their social networks before and after the first semester to us, and we will soon be able to match to what extent the social networks of women may have different shapes than the ones of men, in particular with respect to their size, where we

hypothesize that women may be connected to fewer students in their respective cohort. If these conjectures are corroborated by the data, it will be an indication that the differences we have found in the laboratory correspond to differences in real behavior in the world.

# 4.A Appendix

Table 4.A.1: Personal Characteristics

**Survey and Subject Indicators (Matched Subjects only)**

| Variable | All | | | Male | | | Female | | |
|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| Gender | 363 | 0.44 | (0.50) | | | | | | |
| Age | 363 | 20.47 | (2.35) | 205 | 20.56 | (2.47) | 158 | 20.35 | (2.19) |
| Origin: Rhein Main Area | 292 | 0.55 | (0.70) | 161 | 0.58 | (0.83) | 131 | 0.51 | (0.50) |
| Amount of Real Friends | 293 | 24.27 | (65.06) | 162 | 28.59 | (85.07) | 131 | 18.92 | (22.15) |
| Amount of Facebook Friends | 291 | 346.96 | (257.22) | 161 | 318.19 | (210.92) | 130 | 382.58 | (302.07) |
| **Risk Attittudes:** | | | | | | | | | |
| General Willingness to take risks | 293 | 5.82 | (1.88) | 161 | 6.03 | (1.88) | 132 | 5.55 | (1.85) |
| H-L Lottery Switching Point | 254 | 4.72 | (1.82) | 146 | 4.75 | (1.68) | 108 | 4.69 | (2.01) |
| **Trust Attitudes:** | | | | | | | | | |
| General trust in other people | 294 | 2.66 | (0.68) | 162 | 2.63 | (0.68) | 132 | 2.70 | (0.69) |
| Rely on sombody else | 294 | 1.94 | (0.77) | 162 | 1.93 | (0.76) | 132 | 1.95 | (0.79) |
| Cautiousness upon strangers | 294 | 3.13 | (0.74) | 162 | 3.07 | (0.74) | 132 | 3.20 | (0.74) |

Table 4.A.2: Tobit regressions on amounts sent to partners with respect to risk aversion

| **Dependent Variables:** | **Amount Sent (First Stage)** | | | **Amount Sent to OLD Partner (Second Stage)** | | | **Amount Sent to NEW Partner (Second Stage)** | | |
|---|---|---|---|---|---|---|---|---|---|
| **Independent Variables** | I | II | III | I | II | III | I | II | III |
| Risk Aversion HL | 0.138 | | | 0.088 | | | 0.029 | | |
| | (0.153) | | | (0.127) | | | (0.107) | | |
| Risk Aversion Q | | 0.010 | | | -0.010 | | | 0.113 | |
| | | (0.130) | | | (0.107) | | | (0.090) | |
| Risk Aversion EG | | | 0.376 | | | -0.042 | | | 0.460** |
| | | | (0.276) | | | (0.228) | | | (0.190) |
| LR Chi² | 0.82 | 0.01 | 1.86 | 0.48 | 0.01 | 0.03 | 0.07 | 1.55 | 5.81 |
| Observations | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 |

Note: Censored Tobit regression; the variable risk aversion HL is the switching point from the Holt and Laury (2002) test. For those individuals with missing data (Holt and Laury test was done during the questionnaire phase, while data on trust games were recorded during the experimental phase), we replace their switching point by the average switching point for females if the subject was female and similarly for males; the variable risk aversion Q is the chosen number from a scale from 1 (not prepared to take risks at all) to 10 (very prepared to take risks) from the questionnaire and, for those individuals with missing data, we replace their number choice by the average number choice for females if the subject was female and similarly for males; the variable risk aversion EG is the chosen lottery from the Eckel and Grossman (2008) test and, for those individuals with missing data, we replace their lottery choice by the average lottery choice for females if the subject was female and similarly for males; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Table 4.A.3: Tobit regression on amount returned (first stage)

| **Dependent Variable:** | **Amount returned (first stage)** |
|---|---|
| **Independent Variables** | I |
| Female | -1.669* |
| | (0.995) |
| Partner's Amount Sent | -0.178*** |
| | (0.068) |
| Partner's Amount Sent *Female | 0.240** |
| | (0.102) |
| LR Chi$^2$ | 30.12 |
| Observations | 363 |

Note: Consored Tobit regression; standart errors in parentheses; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Table 4.A.4: Tobit regression on amount returned to old partner (second stage)

| **Dependent Variable:** | **Amount returned to OLD Partner (second stage)** |
|---|---|
| **Independent Variables** | I |
| Female | 1.346 |
| | (1.052) |
| Old Partner's Amount Sent (Second Stage) | 1.602*** |
| | (0.101) |
| Old Partner's Amount Sent (Second Stage) * Female | -0.095 |
| | (0.155) |
| Partner's Amount Sent (First Stage) | -0.05 |
| | (0.095) |
| Partner's Amount Sent (First Stage) * Female | 0.144 |
| | (0.134) |
| Partner's Return Rate (First Stage) | 4.589*** |
| | (1.154) |
| Partner's Return Rate (First Stage) * Female | -1.358 |
| | (1.717) |
| Revealed Gender Treatment | 0.752 |
| | (0.467) |
| Revealed Gender Treatment * Female | -0.878 |
| | (0.714) |
| LR Chi$^2$ | 375.59 |
| Observations | 363 |

Note: Consored Tobit regression; standart errors in parentheses; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Table 4.A.5: Tobit regression on amount returned to new partner (second stage)

| **Dependent Variable:** | **Amount returned to NEW Partner (second stage)** |
|---|---|
| **Independent Variables** | I |
| Female | 1.542 |
| | (1.188) |
| New Partner's Amount Sent (Second Stage) | 1.463*** |
| | (0.112) |
| New Partner's Amount Sent (Second Stage) * Female | -0.078 |
| | (0.166) |
| Partner's Amount Sent (First Stage) | -0.047 |
| | (0.090) |
| Partner's Amount Sent (First Stage) * Female | 0.055 |
| | (0.130) |
| Partner's Return Rate (First Stage) | 3.519*** |
| | (1.150) |
| Partner's Return Rate (First Stage) * Female | -1.538 |
| | (1.782) |
| Revealed Gender Treatment | -0.234 |
| | (0.514) |
| Revealed Gender Treatment * Female | -0.309 |
| | (0.763) |
| LR Chi$^2$ | 248.93 |
| Observations | 363 |

Note: Consored Tobit regression; standart errors in parentheses; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Table 4.A.6: Tobit regression on amount sent to new partner (second stage) by gender

| **Dependent Variable:** | **Amount sent to NEW Partner (second stage)** | |
|---|---|---|
| **Independent Variables** | **Males** | **Females** |
| Optimism | 0.939** | 0.445 |
| | (0.385) | (0.283) |
| Partner's Return Rate | -2.257** | -1.148 |
| | (1.015) | (0.782) |
| Partner's Amount Sent | -0.168** | 0.067 |
| | (0.074) | (0.053) |
| Additional Controls: | Yes | Yes |
| LR Chi$^2$ | 37.97 | 26.72 |
| Observations | 209 | 154 |

Note: Consored Tobit regression; standart errors in parentheses; additional controls include Subjects' Amount Sen in Stage 1 and Treatment Dummy Variables; the variable Optimism measures the senders' beliefs about the amounts that their partner will send back for any possible amount the partner may have received. We approximated linearly senders' beliefs and computed the corresponding slope to obtain the optimism variable for each subject;
statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Table 4.A.7: Evidence of Hypothesis 1 (with risk aversion)

| **Dependent Variable:** | **Amount Sent First Stage** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to NEW Partner (second stage)** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to NEW Partner (second stage)** |
|---|---|---|---|---|---|
| **Independent Variables** | I | II | III | IV | V |
| Female | -1.460*** | -0.410 | -0.741** | 0.631 | -0.704 |
| | (0.434) | (0.363) | (0.305) | (0.684) | (0.570) |
| Threshold 1 Treatment | | | | 0.598 | -0.162 |
| | | | | (0.472) | (0.391) |
| Threshold 1 Treatment*Female | | | | -1.539** | 0.149 |
| | | | | (0.702) | (0.587) |
| Revealed Gender Treatment | | | | 0.172 | -0.214 |
| | | | | (0.458) | (0.380) |
| Revealed Gender Treatment*Female | | | | 0.166 | 0.309 |
| | | | | (0.705) | (0.589) |
| Controls | Yes | Yes | Yes | Yes | Yes |
| LR Chi$^2$ | 12.08 | 1.75 | 5.90 | 33.92 | 43.88 |
| Observations | 363 | 363 | 363 | 363 | 363 |

Note: Consored Tobit regression; standart errors in parentheses; controls include subject's amount sent in stage 1 for stage 2 regressions and risk aversion in all regressions; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Table 4.A.8: Evidence of Hypothesis 2 (with risk aversion)

| **Dependent Variable:** | **Amount Sent First Stage** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to OLD Partner (second stage)** | **Amount Sent to NEW Partner (second stage)** |
|---|---|---|---|---|
| **Independent Variables** | I | II | IV | V |
| Female | .114 | 1.243 | 2.204* | -1.775* |
| | (1.082) | (1.086) | (1.191) | (1.041) |
| Optimism | 1.705*** | 0.719* | 0.702* | 0.897*** |
| | (0.503) | (0.412) | (0.379) | (0.325) |
| Optimism*Female | -1.231 | -0.493 | -0.568 | -0.397 |
| | (0.758) | (0.616) | (0.564) | (0.498) |
| Partner's Return Rate | | | 6.747*** | -2.245*** |
| | | | (0.994) | (0.853) |
| Partner's Return Rate*Female | | | -3.225** | 1.178 |
| | | | (1.497) | (1.315) |
| Partner's Amount Sent | | | 0.171** | -0.159** |
| | | | (0.073) | (0.063) |
| Partner's Amount Sent*Female | | | -0.013 | 0.228** |
| | | | (0.109) | (0.095) |
| Controls | Yes | Yes | Yes | Yes |
| LR Chi$^2$ | 24.20 | 37.20 | 107.71 | 71.44 |
| Observations | 363 | 363 | 363 | 363 |

Note: Consored Tobit regression; standart errors in parentheses; the variable Optimism measures the senders' beliefs about the amounts that their partner will send back for any possible amount the partner may have received. We approximated linearly senders' beliefs and computed the corresponding slope to obtain the optimism variable for each subject; controls include subject's amount sent in stage 1 for stage 2 regressions and risk aversion in all regressions; statistical significance: * p<0.10, ** p<0.05, *** p<=0.01;

Table 4.A.9: Decisions as Sender

| Treatment | Over All | | | NoVar | | | RG | | | T1 | | | T1RG | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| Subjects | All Subjects | | | | | | | | | | | | | | |
| Amount sent to: | | | | | | | | | | | | | | | |
| Partner (1S) | 363 | 5.76 | (3.04) | 58 | 6.10 | (3.02) | 102 | 5.39 | (2.98) | 94 | 6.01 | (2.99) | 109 | 5.71 | (3.15) |
| Old Partner (2S) | 363 | 3.01 | (2.60) | 58 | 2.57 | (2.28) | 102 | 3.27 | (2.58) | 94 | 3.20 | (2.81) | 109 | 2.83 | (2.59) |
| New Partner (2S) | 363 | 3.36 | (2.45) | 58 | 3.76 | (2.32) | 102 | 3.08 | (2.39) | 94 | 3.26 | (2.32) | 109 | 3.49 | (2.68) |
| | Male only | | | | | | | | | | | | | | |
| Amount sent to: | | | | | | | | | | | | | | | |
| Partner (1S) | 209 | 6.20 | (3.36) | 30 | 6.93 | (3.45) | 51 | 6.12 | (3.47) | 60 | 5.98 | (3.19) | 68 | 6.12 | (3.41) |
| Old Partner (2S) | 209 | 3.24 | (2.95) | 30 | 2.50 | (2.90) | 51 | 3.39 | (2.95) | 60 | 3.53 | (3.01) | 68 | 3.21 | (2.94) |
| New Partner (2S) | 209 | 3.65 | (2.76) | 30 | 4.30 | (2.95) | 51 | 3.51 | (2.93) | 60 | 3.48 | (2.47) | 68 | 3.62 | (2.80) |
| | Female only | | | | | | | | | | | | | | |
| Amount sent to: | | | | | | | | | | | | | | | |
| Partner (1S) | 154 | 5.17 | (2.43) | 28 | 5.21 | (2.20) | 51 | 4.67 | (2.19) | 34 | 6.06 | (2.64) | 41 | 5.02 | (2.56) |
| Old Partner (2S) | 154 | 2.69 | (2.00) | 28 | 2.64 | (1.39) | 51 | 3.16 | (2.19) | 34 | 2.62 | (2.35) | 41 | 2.22 | (1.72) |
| New Partner (2S) | 154 | 2.95 | (1.90) | 28 | 3.18 | (1.16) | 51 | 2.65 | (1.60) | 34 | 2.85 | (2.00) | 41 | 3.27 | (2.48) |

Table 4.A.10a: Decisions as Receiver in the first stage

| Treatment | **Over All** | | | **NoVar** | | | **RG** | | | **T1** | | | **T1RG** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| Subjects | All Subjects | | | | | | | | | | | | | | |
| Amount back transfered if the partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.81 | (0.78) | | 0.83 | (0.75) | | 0.75 | (0.77) | | 0.93 | (0.85) | | 0.75 | (0.75) |
| 2 points | | 1.76 | (1.51) | | 1.93 | (1.61) | | 1.67 | (1.45) | | 1.90 | (1.59) | | 1.63 | (1.43) |
| 3 points | | 2.78 | (2.05) | | 3.03 | (2.23) | | 2.72 | (1.96) | | 2.88 | (2.06) | | 2.61 | (2.05) |
| 4 points | | 4.06 | (2.57) | | 4.45 | (2.70) | | 4.06 | (2.55) | | 4.03 | (2.44) | | 3.89 | (2.63) |
| 5 points | 363 | 5.45 | (3.04) | 58 | 5.84 | (3.39) | 102 | 5.39 | (2.97) | 94 | 5.56 | (2.89) | 109 | 5.19 | (3.04) |
| 6 points | | 6.75 | (3.63) | | 7.19 | (4.01) | | 6.60 | (3.42) | | 6.85 | (3.53) | | 6.59 | (3.71) |
| 7 points | | 7.97 | (4.23) | | 8.59 | (4.79) | | 7.71 | (4.06) | | 7.98 | (4.00) | | 7.87 | (4.28) |
| 8 points | | 9.15 | (4.80) | | 9.93 | (5.33) | | 9.07 | (4.70) | | 9.13 | (4.50) | | 8.82 | (4.86) |
| 9 points | | 10.43 | (5.56) | | 11.38 | (6.17) | | 10.31 | (5.43) | | 10.52 | (5.36) | | 9.96 | (5.51) |
| 10 points | | 11.63 | (6.41) | | 12.50 | (7.20) | | 11.65 | (6.22) | | 11.34 | (6.32) | | 11.41 | (6.27) |
| Belief of partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.76 | (0.70) | | 0.88 | (0.80) | | 0.72 | (0.65) | | 0.76 | (0.68) | | 0.73 | (0.72) |
| 2 points | | 1.82 | (1.33) | | 2.00 | (1.52) | | 1.75 | (1.21) | | 1.85 | (1.31) | | 1.76 | (1.35) |
| 3 points | | 2.92 | (1.78) | | 3.17 | (1.97) | | 2.83 | (1.67) | | 2.94 | (1.85) | | 2.85 | (1.74) |
| 4 points | | 4.26 | (2.16) | | 4.53 | (2.42) | | 4.21 | (1.99) | | 4.15 | (2.10) | | 4.26 | (2.23) |
| 5 points | 363 | 5.67 | (2.49) | 58 | 6.12 | (2.99) | 102 | 5.55 | (2.39) | 94 | 5.64 | (2.39) | 109 | 5.57 | (2.38) |
| 6 points | | 6.91 | (2.94) | | 7.36 | (3.45) | | 6.93 | (2.79) | | 6.88 | (2.88) | | 6.68 | (2.84) |
| 7 points | | 8.34 | (3.56) | | 8.78 | (4.34) | | 8.41 | (3.46) | | 8.18 | (3.69) | | 8.18 | (3.09) |
| 8 points | | 9.56 | (4.11) | | 10.14 | (4.85) | | 9.59 | (3.84) | | 9.48 | (4.12) | | 9.29 | (3.95) |
| 9 points | | 10.88 | (4.62) | | 11.45 | (5.50) | | 10.83 | (4.41) | | 10.85 | (4.62) | | 10.65 | (4.35) |
| 10 points | | 12.50 | (5.26) | | 13.07 | (6.20) | | 12.70 | (5.21) | | 12.51 | (5.06) | | 12.00 | (4.93) |
| Actual Belief of partners back transfer | | | | | | | | | | | | | | | |
| | 363 | 7.15 | (5.04) | 58 | 7.76 | (5.91) | 102 | 6.58 | (4.72) | 94 | 7.34 | (4.66) | 109 | 7.20 | (5.18) |

Table 4.A.10b: Decisions as Receiver in the first stage (Male only)

| Treatment | Over All | | | NoVar | | | RG | | | T1 | | | T1RG | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| | Male only | | | | | | | | | | | | | | |
| Amount back transfered if the partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.70 | (0.79) | | 0.60 | (0.81) | | 0.67 | (0.77) | | 0.80 | (0.82) | | 0.69 | (0.78) |
| 2 points | | 1.56 | (1.53) | | 1.40 | (1.69) | | 1.51 | (1.58) | | 1.67 | (1.48) | | 1.56 | (1.50) |
| 3 points | | 2.54 | (2.18) | | 2.27 | (2.36) | | 2.57 | (2.19) | | 2.62 | (1.97) | | 2.56 | (2.29) |
| 4 points | | 3.77 | (2.70) | | 3.63 | (2.86) | | 3.84 | (2.82) | | 3.70 | (2.18) | | 3.84 | (3.01) |
| 5 points | 209 | 5.19 | (3.21) | 30 | 5.10 | (3.57) | 51 | 5.14 | (3.29) | 60 | 5.23 | (2.63) | 68 | 5.22 | (3.51) |
| 6 points | | 6.56 | (3.89) | | 6.43 | (4.37) | | 6.67 | (3.74) | | 6.47 | (3.39) | | 6.62 | (4.27) |
| 7 points | | 7.79 | (4.48) | | 7.80 | (5.05) | | 7.86 | (4.35) | | 7.65 | (3.84) | | 7.87 | (4.91) |
| 8 points | | 9.02 | (5.07) | | 9.33 | (5.89) | | 9.25 | (5.00) | | 8.92 | (4.32) | | 8.79 | (5.43) |
| 9 points | | 10.22 | (5.82) | | 10.60 | (6.71) | | 10.45 | (5.63) | | 10.22 | (5.09) | | 9.90 | (6.23) |
| 10 points | | 11.20 | (6.69) | | 11.00 | (7.92) | | 11.76 | (6.31) | | 10.68 | (6.15) | | 11.31 | (6.96) |
| Belief of partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.68 | (0.72) | | 0.67 | (0.80) | | 0.59 | (0.64) | | 0.72 | (0.69) | | 0.72 | (0.77) |
| 2 points | | 1.67 | (1.39) | | 1.63 | (1.59) | | 1.53 | (1.30) | | 1.73 | (1.34) | | 1.75 | (1.44) |
| 3 points | | 2.70 | (1.87) | | 2.73 | (2.02) | | 2.51 | (1.75) | | 2.70 | (1.89) | | 2.84 | (1.91) |
| 4 points | | 4.00 | (2.24) | | 4.03 | (2.57) | | 3.90 | (1.98) | | 3.83 | (1.98) | | 4.19 | (2.51) |
| 5 points | 209 | 5.44 | (2.49) | 30 | 5.43 | (3.04) | 51 | 5.16 | (2.39) | 60 | 5.42 | (2.11) | 68 | 5.68 | (2.65) |
| 6 points | | 6.74 | (2.93) | | 6.83 | (3.66) | | 6.65 | (2.84) | | 6.73 | (2.48) | | 6.76 | (3.07) |
| 7 points | | 8.07 | (3.45) | | 8.13 | (4.38) | | 8.02 | (3.43) | | 7.88 | (3.05) | | 8.24 | (3.40) |
| 8 points | | 9.31 | (4.08) | | 9.33 | (5.21) | | 9.41 | (3.93) | | 9.32 | (3.52) | | 9.21 | (4.20) |
| 9 points | | 10.70 | (4.60) | | 10.80 | (5.93) | | 10.71 | (4.48) | | 10.70 | (4.06) | | 10.66 | (4.58) |
| 10 points | | 12.14 | (5.27) | | 11.97 | (6.96) | | 12.35 | (5.31) | | 12.40 | (4.57) | | 11.82 | (5.05) |
| Actual Belief of partners back transfer | | | | | | | | | | | | | | | |
| | 209 | 7.63 | (5.56) | 30 | 8.37 | (7.28) | 51 | 7.35 | (5.04) | 60 | 7.15 | (4.77) | 68 | 7.93 | (5.77) |

Table 4.A.10c: Decisions as Receiver in the first stage (Female only)

| Treatment | **Over All** | | | **NoVar** | | | **RG** | | | **T1** | | | **T1RG** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| | Female only | | | | | | | | | | | | | | |
| Amount back transfered if the partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.95 | (0.75) | | 1.07 | (0.60) | | 0.82 | (0.77) | | 1.15 | (0.86) | | 0.85 | (0.69) |
| 2 points | | 2.04 | (1.43) | | 2.50 | (1.32) | | 1.82 | (1.31) | | 2.32 | (1.72) | | 1.76 | (1.32) |
| 3 points | | 3.10 | (1.83) | | 3.86 | (1.78) | | 2.86 | (1.70) | | 3.35 | (2.17) | | 2.68 | (1.59) |
| 4 points | | 4.46 | (2.32) | | 5.32 | (2.26) | | 4.27 | (2.25) | | 4.62 | (2.77) | | 3.98 | (1.88) |
| 5 points | 154 | 5.81 | (2.76) | 28 | 6.64 | (3.06) | 51 | 5.65 | (2.61) | 34 | 6.15 | (3.26) | 41 | 5.15 | (2.09) |
| 6 points | | 7.02 | (3.22) | | 8.00 | (3.47) | | 6.53 | (3.11) | | 7.53 | (3.71) | | 6.54 | (2.58) |
| 7 points | | 8.20 | (3.86) | | 9.43 | (4.43) | | 7.55 | (3.79) | | 8.56 | (4.25) | | 7.88 | (3.02) |
| 8 points | | 9.32 | (4.41) | | 10.57 | (4.69) | | 8.88 | (4.41) | | 9.50 | (4.84) | | 8.85 | (3.78) |
| 9 points | | 10.71 | (5.19) | | 12.21 | (5.52) | | 10.18 | (5.28) | | 11.06 | (5.85) | | 10.07 | (4.12) |
| 10 points | | 12.23 | (5.98) | | 14.11 | (6.06) | | 11.53 | (6.20) | | 12.50 | (6.53) | | 11.59 | (4.99) |
| Belief of partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.86 | (0.67) | | 1.11 | (0.74) | | 0.84 | (0.64) | | 0.82 | (0.67) | | 0.76 | (0.62) |
| 2 points | | 2.01 | (1.22) | | 2.39 | (1.37) | | 1.96 | (1.08) | | 2.06 | (1.25) | | 1.78 | (1.21) |
| 3 points | | 3.21 | (1.62) | | 3.64 | (1.83) | | 3.16 | (1.53) | | 3.35 | (1.74) | | 2.88 | (1.44) |
| 4 points | | 4.62 | (2.00) | | 5.07 | (2.18) | | 4.51 | (1.96) | | 4.71 | (2.24) | | 4.37 | (1.70) |
| 5 points | 154 | 5.98 | (2.46) | 28 | 6.86 | (2.81) | 51 | 5.94 | (2.34) | 34 | 6.03 | (2.81) | 41 | 5.39 | (1.87) |
| 6 points | | 7.15 | (2.95) | | 7.93 | (3.18) | | 7.22 | (2.74) | | 7.15 | (3.50) | | 6.54 | (2.46) |
| 7 points | | 8.71 | (3.69) | | 9.46 | (4.26) | | 8.80 | (3.48) | | 8.71 | (4.61) | | 8.10 | (2.53) |
| 8 points | | 9.90 | (4.14) | | 11.00 | (4.35) | | 9.76 | (3.78) | | 9.76 | (5.07) | | 9.44 | (3.56) |
| 9 points | | 11.12 | (4.66) | | 12.14 | (5.02) | | 10.96 | (4.39) | | 11.12 | (5.51) | | 10.63 | (3.99) |
| 10 points | | 12.99 | (5.22) | | 14.25 | (5.14) | | 13.04 | (5.15) | | 12.71 | (5.91) | | 12.29 | (4.78) |
| Actual Belief of partners back transfer | | | | | | | | | | | | | | | |
| | 154 | 6.51 | (4.18) | 28 | 7.11 | (4.01) | 51 | 5.80 | (4.28) | 34 | 7.68 | (4.50) | 41 | 6.00 | (3.77) |

Table 4.A.11a: Decisions as Receiver in the second stage to old partner

| Treatment | **Over All** | | | **NoVar** | | | **RG** | | | **T1** | | | **T1RG** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| Subjects | All Subjects | | | | | | | | | | | | | | |
| Amount back transfered if the old partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.65 | (0.76) | | 0.67 | (0.76) | | 0.63 | (0.72) | | 0.62 | (0.76) | | 0.68 | (0.82) |
| 2 points | | 1.31 | (1.40) | | 1.53 | (1.51) | | 1.30 | (1.38) | | 1.24 | (1.32) | | 1.27 | (1.44) |
| 3 points | | 2.18 | (1.99) | | 2.38 | (2.08) | | 2.26 | (1.97) | | 2.07 | (1.99) | | 2.10 | (2.00) |
| 4 points | | 3.19 | (2.58) | | 3.55 | (2.80) | | 3.22 | (2.48) | | 2.99 | (2.52) | | 3.16 | (2.62) |
| 5 points | 363 | 4.27 | (3.22) | 58 | 4.71 | (3.47) | 102 | 4.33 | (3.13) | 94 | 4.04 | (3.16) | 109 | 4.18 | (3.23) |
| 6 points | | 5.25 | (3.90) | | 5.88 | (4.20) | | 5.31 | (3.75) | | 4.98 | (3.86) | | 5.10 | (3.93) |
| 7 points | | 6.20 | (4.66) | | 7.00 | (5.08) | | 6.36 | (4.44) | | 5.79 | (4.51) | | 5.98 | (4.77) |
| 8 points | | 7.33 | (5.43) | | 8.52 | (6.04) | | 7.54 | (5.21) | | 6.94 | (5.31) | | 6.85 | (5.37) |
| 9 points | | 8.31 | (6.09) | | 9.53 | (6.58) | | 8.68 | (5.88) | | 7.85 | (6.02) | | 7.70 | (6.03) |
| 10 points | | 9.44 | (6.87) | | 12.50 | (7.20) | | 9.75 | (6.59) | | 9.05 | (6.79) | | 8.86 | (6.85) |
| Belief of old partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.73 | (0.75) | | 0.66 | (0.78) | | 0.79 | (0.76) | | 0.76 | (0.73) | | 0.69 | (0.75) |
| 2 points | | 1.56 | (1.38) | | 1.45 | (1.45) | | 1.75 | (1.44) | | 1.68 | (1.37) | | 1.34 | (1.26) |
| 3 points | | 2.55 | (1.91) | | 2.47 | (2.05) | | 2.78 | (1.97) | | 2.67 | (1.89) | | 2.28 | (1.76) |
| 4 points | | 3.72 | (2.47) | | 3.66 | (2.87) | | 3.93 | (2.43) | | 3.88 | (2.40) | | 3.40 | (2.32) |
| 5 points | 363 | 4.80 | (2.96) | 58 | 4.60 | (3.40) | 102 | 5.20 | (2.91) | 94 | 5.10 | (2.98) | 109 | 4.29 | (2.67) |
| 6 points | | 5.97 | (3.54) | | 5.95 | (4.13) | | 6.28 | (3.46) | | 6.23 | (3.53) | | 5.45 | (3.27) |
| 7 points | | 7.13 | (4.21) | | 7.22 | (4.95) | | 7.57 | (4.21) | | 7.45 | (4.18) | | 6.39 | (3.73) |
| 8 points | | 8.29 | (4.75) | | 8.34 | (5.49) | | 8.73 | (4.68) | | 8.68 | (4.67) | | 7.53 | (4.40) |
| 9 points | | 9.42 | (5.44) | | 9.45 | (6.21) | | 10.06 | (5.45) | | 9.90 | (5.36) | | 8.39 | (4.99) |
| 10 points | | 10.68 | (6.21) | | 10.28 | (7.08) | | 11.35 | (6.26) | | 11.38 | (6.06) | | 9.65 | (5.70) |
| Actual Belief of old partners back transfer | | | | | | | | | | | | | | | |
| | 363 | 3.54 | (4.06) | 58 | 2.67 | (3.35) | 102 | 4.14 | (4.31) | 94 | 4.00 | (4.52) | 109 | 3.05 | (3.65) |

Table 4.A.11b: Decisions as Receiver in the second stage to old partner (Male only)

| Treatment | **Over All** | | | **NoVar** | | | **RG** | | | **T1** | | | **T1RG** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| | Male only | | | | | | | | | | | | | | |
| Amount back transfered if the old partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.57 | (0.78) | | 0.47 | (0.78) | | 0.57 | (0.70) | | 0.55 | (0.75) | | 0.63 | (0.86) |
| 2 points | | 1.14 | (1.39) | | 1.07 | (1.57) | | 1.18 | (1.32) | | 1.08 | (1.23) | | 1.21 | (1.52) |
| 3 points | | 1.98 | (2.06) | | 1.80 | (2.23) | | 2.14 | (2.07) | | 1.87 | (1.90) | | 2.03 | (2.13) |
| 4 points | | 2.93 | (2.66) | | 2.87 | (2.94) | | 3.08 | (2.78) | | 2.68 | (2.31) | | 3.07 | (2.76) |
| 5 points | 209 | 3.98 | (3.37) | 30 | 3.87 | (3.72) | 51 | 4.12 | (3.44) | 60 | 3.80 | (3.03) | 68 | 4.09 | (3.51) |
| 6 points | | 4.90 | (4.07) | | 5.03 | (4.57) | | 5.06 | (4.11) | | 4.55 | (3.61) | | 5.03 | (4.27) |
| 7 points | | 5.84 | (4.84) | | 6.13 | (5.39) | | 6.00 | (4.76) | | 5.32 | (4.28) | | 6.04 | (5.19) |
| 8 points | | 6.91 | (5.63) | | 7.30 | (6.33) | | 7.20 | (5.56) | | 6.55 | (5.14) | | 6.85 | (5.88) |
| 9 points | | 7.89 | (6.33) | | 8.40 | (7.22) | | 8.27 | (6.22) | | 7.50 | (5.74) | | 7.71 | (6.59) |
| 10 points | | 8.95 | (7.20) | | 9.10 | (8.21) | | 9.31 | (6.98) | | 8.75 | (6.65) | | 8.78 | (7.50) |
| Belief of old partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.68 | (0.75) | | 0.50 | (0.82) | | 0.75 | (0.72) | | 0.73 | (0.69) | | 0.66 | (0.80) |
| 2 points | | 1.44 | (1.36) | | 1.17 | (1.56) | | 1.61 | (1.39) | | 1.58 | (1.27) | | 1.32 | (1.32) |
| 3 points | | 2.40 | (1.92) | | 2.07 | (2.27) | | 2.55 | (1.98) | | 2.55 | (1.77) | | 2.29 | (1.86) |
| 4 points | | 3.52 | (2.46) | | 2.97 | (2.91) | | 3.71 | (2.56) | | 3.68 | (2.16) | | 3.47 | (2.45) |
| 5 points | 209 | 4.62 | (2.93) | 30 | 4.03 | (3.62) | 51 | 4.96 | (2.99) | 60 | 4.90 | (2.59) | 68 | 4.37 | (2.84) |
| 6 points | | 5.69 | (3.51) | | 5.00 | (4.32) | | 6.06 | (3.66) | | 5.92 | (2.99) | | 5.53 | (3.45) |
| 7 points | | 6.78 | (4.10) | | 6.03 | (5.00) | | 7.20 | (4.24) | | 7.07 | (3.70) | | 6.53 | (3.90) |
| 8 points | | 7.97 | (4.76) | | 6.93 | (5.71) | | 8.45 | (4.95) | | 8.38 | (4.24) | | 7.69 | (4.60) |
| 9 points | | 9.00 | (5.39) | | 8.03 | (6.49) | | 9.51 | (5.69) | | 9.53 | (4.82) | | 8.57 | (5.13) |
| 10 points | | 10.20 | (6.18) | | 8.47 | (7.12) | | 10.65 | (6.51) | | 11.07 | (5.62) | | 9.87 | (5.91) |
| Actual Belief of old partners back transfer | | | | | | | | | | | | | | | |
| | 209 | 3.87 | (4.39) | 30 | 2.60 | (4.19) | 51 | 4.27 | (4.47) | 60 | 4.33 | (4.63) | 68 | 3.71 | (4.18) |

Table 4.A.11c: Decisions as Receiver in the second stage to old partner (Female only)

| Treatment | Over All | | | NoVar | | | RG | | | T1 | | | T1RG | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| | Female only | | | | | | | | | | | | | | |
| Amount back transfered if the old partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.75 | (0.73) | | 0.89 | (0.69) | | 0.69 | (0.73) | | 0.74 | (0.79) | | 0.76 | (0.73) |
| 2 points | | 1.55 | (1.38) | | 2.04 | (1.29) | | 1.43 | (1.43) | | 1.53 | (1.44) | | 1.37 | (1.30) |
| 3 points | | 2.47 | (1.88) | | 3.00 | (1.72) | | 2.39 | (1.88) | | 2.44 | (2.11) | | 2.22 | (1.78) |
| 4 points | | 3.55 | (2.44) | | 4.29 | (2.49) | | 3.35 | (2.16) | | 3.53 | (2.80) | | 3.29 | (2.40) |
| 5 points | 154 | 4.67 | (2.96) | 28 | 5.61 | (3.00) | 51 | 4.55 | (2.79) | 34 | 4.47 | (3.37) | 41 | 4.34 | (2.75) |
| 6 points | | 5.73 | (3.61) | | 6.79 | (3.62) | | 5.57 | (3.39) | | 5.74 | (4.20) | | 5.22 | (3.33) |
| 7 points | | 6.69 | (4.37) | | 7.93 | (4.64) | | 6.73 | (4.10) | | 6.62 | (4.86) | | 5.88 | (4.04) |
| 8 points | | 7.90 | (5.11) | | 9.82 | (5.53) | | 7.88 | (4.86) | | 7.62 | (5.61) | | 6.85 | (4.48) |
| 9 points | | 8.88 | (5.72) | | 10.75 | (5.69) | | 9.08 | (5.56) | | 8.47 | (6.51) | | 7.68 | (5.07) |
| 10 points | | 10.12 | (6.37) | | 12.25 | (6.47) | | 10.20 | (6.22) | | 9.59 | (7.10) | | 9.00 | (5.70) |
| Belief of old partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.80 | (0.75) | | 0.82 | (0.72) | | 0.84 | (0.81) | | 0.79 | (0.81) | | 0.73 | (0.67) |
| 2 points | | 1.71 | (1.39) | | 1.75 | (1.29) | | 1.88 | (1.49) | | 1.85 | (1.54) | | 1.37 | (1.18) |
| 3 points | | 2.77 | (1.87) | | 2.89 | (1.73) | | 3.02 | (1.95) | | 2.88 | (2.10) | | 2.27 | (1.61) |
| 4 points | | 3.99 | (2.45) | | 4.39 | (2.69) | | 4.16 | (2.30) | | 4.24 | (2.79) | | 3.29 | (2.11) |
| 5 points | 154 | 5.06 | (2.98) | 28 | 5.21 | (3.08) | 51 | 5.43 | (2.84) | 34 | 5.44 | (3.58) | 41 | 4.17 | (2.40) |
| 6 points | | 6.34 | (3.56) | | 6.96 | (3.72) | | 6.51 | (3.28) | | 6.79 | (4.31) | | 5.32 | (2.98) |
| 7 points | | 7.61 | (4.32) | | 8.50 | (4.65) | | 7.94 | (4.18) | | 8.12 | (4.90) | | 6.17 | (3.46) |
| 8 points | | 8.74 | (4.71) | | 9.86 | (4.90) | | 9.00 | (4.43) | | 9.21 | (5.38) | | 7.27 | (4.09) |
| 9 points | | 9.99 | (5.48) | | 10.96 | (5.61) | | 10.61 | (5.19) | | 10.56 | (6.22) | | 8.10 | (4.78) |
| 10 points | | 11.32 | (6.21) | | 12.21 | (6.62) | | 12.06 | (5.98) | | 11.94 | (6.81) | | 9.29 | (5.40) |
| Actual Belief of old partners back transfer | | | | | | | | | | | | | | | |
| | 154 | 3.10 | (3.54) | 28 | 2.75 | (2.19) | 51 | 4.00 | (4.18) | 34 | 3.41 | (4.31) | 41 | 1.95 | (2.21) |

Table 4.A.12a: Decisions as Receiver in the second stage to new partner

| Treatment | **Over All** | | | **NoVar** | | | **RG** | | | **T1** | | | **T1RG** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| Subjects | All Subjects | | | | | | | | | | | | | | |
| Amount back transfered if the new partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.67 | (0.72) | | 0.62 | (0.72) | | 0.69 | (0.74) | | 0.68 | (0.71) | | 0.67 | (0.71) |
| 2 points | | 1.41 | (1.37) | | 1.48 | (1.44) | | 1.41 | (1.46) | | 1.37 | (1.34) | | 1.41 | (1.30) |
| 3 points | | 2.32 | (1.89) | | 2.55 | (2.00) | | 2.27 | (1.90) | | 2.27 | (1.91) | | 2.28 | (1.80) |
| 4 points | | 3.43 | (2.47) | | 3.72 | (2.56) | | 3.49 | (2.50) | | 3.39 | (2.48) | | 3.25 | (2.40) |
| 5 points | 363 | 4.55 | (3.03) | 58 | 4.97 | (3.23) | 102 | 4.57 | (3.06) | 94 | 4.51 | (3.08) | 109 | 4.34 | (2.86) |
| 6 points | | 5.66 | (3.64) | | 6.41 | (3.76) | | 5.73 | (3.67) | | 5.45 | (3.63) | | 5.39 | (3.53) |
| 7 points | | 6.69 | (4.35) | | 7.34 | (4.66) | | 6.72 | (4.34) | | 6.61 | (4.37) | | 6.38 | (4.20) |
| 8 points | | 7.80 | (5.04) | | 8.66 | (5.09) | | 7.86 | (5.07) | | 7.61 | (5.21) | | 7.45 | (4.86) |
| 9 points | | 8.82 | (5.75) | | 9.86 | (5.85) | | 8.95 | (5.81) | | 8.45 | (5.80) | | 8.45 | (5.59) |
| 10 points | | 9.95 | (6.53) | | 12.50 | (7.20) | | 10.17 | (6.59) | | 9.69 | (6.59) | | 9.44 | (6.33) |
| Belief of new partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.77 | (0.70) | | 0.66 | (0.71) | | 0.77 | (0.67) | | 0.82 | (0.70) | | 0.78 | (0.72) |
| 2 points | | 1.72 | (1.28) | | 1.66 | (1.38) | | 1.73 | (1.35) | | 1.83 | (1.24) | | 1.66 | (1.21) |
| 3 points | | 2.79 | (1.74) | | 2.69 | (1.88) | | 2.80 | (1.82) | | 2.87 | (1.61) | | 2.74 | (1.71) |
| 4 points | | 4.06 | (2.06) | | 4.05 | (2.37) | | 4.24 | (2.14) | | 4.13 | (1.91) | | 3.85 | (1.93) |
| 5 points | 363 | 5.36 | (2.53) | 58 | 5.48 | (3.01) | 102 | 5.57 | (2.60) | 94 | 5.36 | (2.28) | 109 | 5.08 | (2.41) |
| 6 points | | 6.58 | (2.97) | | 6.78 | (3.54) | | 6.77 | (3.05) | | 6.54 | (2.73) | | 6.33 | (2.77) |
| 7 points | | 7.85 | (3.51) | | 8.02 | (4.27) | | 8.20 | (3.59) | | 7.85 | (3.21) | | 7.42 | (3.24) |
| 8 points | | 9.12 | (4.03) | | 9.41 | (4.79) | | 9.50 | (4.10) | | 9.07 | (3.73) | | 8.65 | (3.78) |
| 9 points | | 10.34 | (4.66) | | 10.57 | (5.54) | | 10.64 | (4.75) | | 10.43 | (4.30) | | 9.88 | (4.39) |
| 10 points | | 11.74 | (5.34) | | 11.90 | (6.18) | | 12.08 | (5.41) | | 11.81 | (5.17) | | 11.27 | (4.97) |
| Actual Belief of new partners back transfer | | | | | | | | | | | | | | | |
| | 363 | 3.81 | (3.67) | 58 | 4.28 | (3.95) | 102 | 3.50 | (3.76) | 94 | 3.59 | (3.15) | 109 | 4.04 | (3.86) |

Table 4.A.12b: Decisions as Receiver in the second stage to new partner (Male only)

| Treatment | **Over All** | | | **NoVar** | | | **RG** | | | **T1** | | | **T1RG** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| | Male only | | | | | | | | | | | | | | |
| Amount back transfered if the new partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.59 | (0.74) | | 0.37 | (0.72) | | 0.67 | (0.82) | | 0.65 | (0.68) | | 0.59 | (0.74) |
| 2 points | | 1.27 | (1.43) | | 0.90 | (1.47) | | 1.37 | (1.60) | | 1.32 | (1.32) | | 1.32 | (1.37) |
| 3 points | | 2.12 | (1.99) | | 1.80 | (2.06) | | 2.24 | (2.21) | | 2.22 | (1.87) | | 2.10 | (1.90) |
| 4 points | | 3.21 | (2.62) | | 2.83 | (2.57) | | 3.43 | (2.89) | | 3.37 | (2.51) | | 3.06 | (2.55) |
| 5 points | 209 | 4.31 | (3.22) | 30 | 4.00 | (3.31) | 51 | 4.61 | (3.49) | 60 | 4.48 | (3.08) | 68 | 4.06 | (3.13) |
| 6 points | | 5.43 | (3.91) | | 5.40 | (3.98) | | 5.78 | (4.22) | | 5.45 | (3.70) | | 5.15 | (3.88) |
| 7 points | | 6.43 | (4.63) | | 6.23 | (4.85) | | 6.82 | (4.97) | | 6.52 | (4.29) | | 6.13 | (4.63) |
| 8 points | | 7.42 | (5.36) | | 7.33 | (5.57) | | 8.06 | (5.72) | | 7.35 | (5.04) | | 7.04 | (5.33) |
| 9 points | | 8.43 | (6.12) | | 8.47 | (6.54) | | 9.12 | (6.48) | | 8.18 | (5.64) | | 8.12 | (6.16) |
| 10 points | | 9.56 | (6.90) | | 9.40 | (7.43) | | 10.27 | (7.27) | | 9.55 | (6.52) | | 9.10 | (6.80) |
| Belief of new partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.71 | (0.72) | | 0.43 | (0.68) | | 0.75 | (0.72) | | 0.82 | (0.70) | | 0.72 | (0.75) |
| 2 points | | 1.58 | (1.33) | | 1.17 | (1.39) | | 1.63 | (1.51) | | 1.77 | (1.27) | | 1.56 | (1.20) |
| 3 points | | 2.63 | (1.82) | | 2.07 | (1.84) | | 2.59 | (2.01) | | 2.87 | (1.59) | | 2.71 | (1.85) |
| 4 points | | 3.85 | (2.14) | | 3.43 | (2.24) | | 4.02 | (2.49) | | 4.00 | (1.79) | | 3.78 | (2.11) |
| 5 points | 209 | 5.13 | (2.60) | 30 | 4.60 | (2.76) | 51 | 5.31 | (2.91) | 60 | 5.42 | (2.15) | 68 | 4.97 | (2.67) |
| 6 points | | 6.37 | (3.04) | | 5.87 | (3.37) | | 6.65 | (3.49) | | 6.50 | (2.45) | | 6.28 | (3.03) |
| 7 points | | 7.60 | (3.56) | | 6.97 | (4.05) | | 7.94 | (3.96) | | 7.83 | (2.89) | | 7.43 | (3.58) |
| 8 points | | 8.81 | (4.12) | | 8.17 | (4.65) | | 9.16 | (4.59) | | 9.10 | (3.35) | | 8.57 | (4.17) |
| 9 points | | 10.05 | (4.71) | | 9.37 | (5.39) | | 10.12 | (5.25) | | 10.53 | (3.83) | | 9.88 | (4.74) |
| 10 points | | 11.47 | (5.46) | | 10.43 | (6.16) | | 11.65 | (5.88) | | 12.00 | (4.88) | | 11.34 | (5.36) |
| Actual Belief of new partners back transfer | | | | | | | | | | | | | | | |
| | 209 | 4.19 | (4.17) | 30 | 4.87 | (4.89) | 51 | 4.02 | (4.64) | 60 | 3.77 | (3.29) | 68 | 4.38 | (4.20) |

Table 4.A.12c: Decisions as Receiver in the second stage to new partner (Female only)

| Treatment | **Over All** | | | **NoVar** | | | **RG** | | | **T1** | | | **T1RG** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. | Obs | Mean | Std. Dev. |
| | Female only | | | | | | | | | | | | | | |
| Amount back transfered if the new partner sent | | | | | | | | | | | | | | | |
| 1 point | | 0.77 | (0.67) | | 0.89 | (0.63) | | 0.71 | (0.67) | | 0.74 | (0.75) | | 0.80 | (0.64) |
| 2 points | | 1.60 | (1.28) | | 2.11 | (1.13) | | 1.45 | (1.32) | | 1.47 | (1.38) | | 1.56 | (1.18) |
| 3 points | | 2.58 | (1.71) | | 3.36 | (1.62) | | 2.31 | (1.54) | | 2.35 | (2.00) | | 2.56 | (1.61) |
| 4 points | | 3.73 | (2.22) | | 4.68 | (2.21) | | 3.55 | (2.07) | | 3.44 | (2.45) | | 3.56 | (2.12) |
| 5 points | 154 | 4.88 | (2.72) | 28 | 6.00 | (2.84) | 51 | 4.53 | (2.60) | 34 | 4.56 | (3.12) | 41 | 4.80 | (2.29) |
| 6 points | | 5.99 | (3.21) | | 7.50 | (3.23) | | 5.67 | (3.08) | | 5.44 | (3.56) | | 5.80 | (2.86) |
| 7 points | | 7.04 | (3.93) | | 8.54 | (4.21) | | 6.61 | (3.64) | | 6.76 | (4.56) | | 6.78 | (3.39) |
| 8 points | | 8.31 | (4.55) | | 10.07 | (4.15) | | 7.67 | (4.37) | | 8.06 | (5.53) | | 8.12 | (3.94) |
| 9 points | | 9.34 | (5.17) | | 11.36 | (4.67) | | 8.78 | (5.12) | | 8.91 | (6.14) | | 9.00 | (4.49) |
| 10 points | | 10.47 | (5.99) | | 12.57 | (5.68) | | 10.06 | (5.90) | | 9.94 | (6.80) | | 10.00 | (5.47) |
| Belief of new partners back transfer if subject in the role of trustor sent | | | | | | | | | | | | | | | |
| 1 point | | 0.84 | (0.67) | | 0.89 | (0.69) | | 0.80 | (0.63) | | 0.82 | (0.72) | | 0.88 | (0.68) |
| 2 points | | 1.92 | (1.19) | | 2.18 | (1.19) | | 1.82 | (1.18) | | 1.94 | (1.20) | | 1.83 | (1.22) |
| 3 points | | 2.99 | (1.59) | | 3.36 | (1.70) | | 3.02 | (1.59) | | 2.88 | (1.67) | | 2.80 | (1.47) |
| 4 points | | 4.35 | (1.91) | | 4.71 | (2.35) | | 4.45 | (1.72) | | 4.35 | (2.12) | | 3.98 | (1.62) |
| 5 points | 154 | 5.66 | (2.41) | 28 | 6.43 | (3.02) | 51 | 5.82 | (2.24) | 34 | 5.26 | (2.53) | 41 | 5.27 | (1.94) |
| 6 points | | 6.86 | (2.86) | | 7.75 | (3.51) | | 6.90 | (2.57) | | 6.62 | (3.20) | | 6.41 | (2.31) |
| 7 points | | 8.18 | (3.44) | | 9.14 | (4.29) | | 8.45 | (3.20) | | 7.88 | (3.74) | | 7.41 | (2.64) |
| 8 points | | 9.55 | (3.88) | | 10.75 | (4.66) | | 9.84 | (3.55) | | 9.03 | (4.37) | | 8.78 | (3.06) |
| 9 points | | 10.74 | (4.57) | | 11.86 | (5.50) | | 11.16 | (4.17) | | 10.24 | (5.08) | | 9.88 | (3.79) |
| 10 points | | 12.09 | (5.17) | | 13.46 | (5.91) | | 12.51 | (4.92) | | 11.47 | (5.72) | | 11.15 | (4.30) |
| Actual Belief of new partners back transfer | | | | | | | | | | | | | | | |
| | 154 | 3.29 | (2.80) | 28 | 3.64 | (2.54) | 51 | 2.98 | (2.54) | 34 | 3.26 | (2.91) | 41 | 3.46 | (3.20) |

# 4.B Initial questionnaires

Cover sheet of the questionnaire in the first wave

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

**Studie der Goethe Universität Frankfurt**

Liebe Studierende,

Sie nehmen nun an einem ökonomischen Experiment der Goethe-Universität Frankfurt teil, in dem Sie **Geld** gewinnen können. Zunächst möchten wir Sie bitten einen Fragebogen auszufüllen. Bitte beantworten Sie sämtliche Fragen offen und ehrlich. Im Anschluss daran folgt der Experimentteil in dem wir Sie bitten ihre Entscheidungen zu treffen.

In einiger Zeit werden wir erneut auf Sie zu kommen, um Sie zu weiteren Experimenten einzuladen. Deshalb ist es wichtig, dass Sie auf diesem Blatt Ihren Namen und Ihre E-Mail Adresse angeben. Diese Kontaktdaten dienen **nur** dazu, Sie zu weiteren Experimenten einzuladen. Ihre Kontaktdaten werden nie mit Ihren Entscheidungen in Verbindungen gebracht.

Wir garantieren Ihnen, alle Daten streng vertraulich zu behandeln. Die Daten werden ausschließlich im Rahmen dieser wissenschaftlichen Studie verwendet und getrennt von den erhobenen Fragebögen aufbewahrt.

**Wichtig:** Die Beantwortung sämtlicher Fragen ist freiwillig und hat keinerlei Auswirkungen auf Ihr persönliches Studium! Alle Ihre Entscheidungen sind anonym, das bedeutet, dass andere Teilnehmer/innen keinerlei Informationen über Ihre Identität erhalten.

Am Ende des Experimentes erhalten **drei Personen ihr Gesamteinkommen in bar ausbezahlt**. Die Auszahlung erfolgt privat, so dass kein anderer Teilnehmer erfährt, wie viel Sie genau verdienen.

Bitte tragen Sie nun Ihre Kontaktdaten ein, damit wir Sie zu den Folgeexperimenten einladen können.

| | |
|---|---|
| Ihr Vorname: | |
| Ihre Nachname: | |
| Ihre E-Mail Adresse: | |
| Ihr Code: | |
| Ihre E-Wochen Gruppe: | |

Cover sheet of the questionnaire in the second wave

**Studie der Goethe Universität Frankfurt**

Liebe Studierende,

Sie nehmen nun an einem ökonomischen Experiment der Goethe-Universität Frankfurt teil, in dem Sie **Geld** gewinnen können. Zunächst möchten wir Sie bitten einen Fragebogen auszufüllen. Bitte beantworten Sie sämtliche Fragen offen und ehrlich. Im Anschluss daran folgt der Experimentteil in dem wir Sie bitten ihre Entscheidungen zu treffen.

In einiger Zeit werden wir erneut auf Sie zu kommen, um Sie zu weiteren Experimenten einzuladen. Deshalb ist es wichtig, dass Sie auf diesem Blatt Ihren Namen und Ihre E-Mail Adresse angeben. Diese Kontaktdaten dienen **nur** dazu, Sie zu weiteren Experimenten einzuladen. Ihre Kontaktdaten werden nie mit Ihren Entscheidungen in Verbindungen gebracht.

Wir garantieren Ihnen, alle Daten streng vertraulich zu behandeln. Die Daten werden ausschließlich im Rahmen dieser wissenschaftlichen Studie verwendet und getrennt von den erhobenen Fragebögen aufbewahrt.

**Wichtig:** Die Beantwortung sämtlicher Fragen ist freiwillig und hat keinerlei Auswirkungen auf Ihr persönliches Studium! Alle Ihre Entscheidungen sind anonym, das bedeutet, dass andere Teilnehmer/innen keinerlei Informationen über Ihre Identität erhalten.

Am Ende des Experimentes erhält jeder **Teilnehmer für seinen Fragebogen 5 € in bar ausbezahlt**. **Eine Person erhält, zusätzlich zu ihrem Teilnahmebetrag, ihr Einkommen aus der Entscheidungssituation in bar ausbezahlt**. Die Auszahlung erfolgt privat, so dass kein anderer Teilnehmer erfährt, wie viel Sie genau verdienen.

Vielen Dank für Ihre Teilnahme!

Prof. Guido Friebel, Ph.D.

Bitte tragen Sie nun Ihre Kontaktdaten ein, damit wir Sie zu den Folgeexperimenten einladen können.

| | |
|---|---|
| Ihr Vorname: | |
| Ihre Nachname: | |
| Ihre E-Mail Adresse: | |
| Ihr Code: | |
| Ihre E-Wochen Gruppe: | |

**Ihr Code**_____

**Fragebogen zu Ihrem Netzwerk**

Von Zeit zu Zeit besprechen die meisten Menschen wichtige persönliche Dinge mit anderen Personen. **Wenn Sie an die letzten 6 Monate denken, wer waren diese Menschen, mit denen Sie wichtige persönliche Dinge besprochen haben?**

Alle Antworten, die Sie in dieser Studie geben, werden **anonymisiert und streng vertraulich** gehandhabt. Bitte tragen Sie zunächst die **Vornamen und den ersten Buchstaben des Nachnamens der Person** in die erste Zeile der Tabelle ein und beantworten Sie die folgenden Fragen zu diesen Personen. Bitte beantworten Sie diese wahrheitsgemäß und nach bestem Wissen indem Sie das entsprechende Kästchen ankreuzen.

Tragen Sie nun **maximal 5 Vornamen von Personen** ein, mit denen Sie wichtige persönliche Dinge besprechen.

| | 1. | 2. | 3. | 4. | 5. |
|---|---|---|---|---|---|
| Vorname und erster Buchstabe des Nachnamens | | | | | |
| Fühlen Sie sich allen Personen stark verbunden?<br>… ja ☐<br>… nein, nur folgenden: | ☐ | ☐ | ☐ | ☐ | ☐ |
| Bitte denken Sie nun an die Verbindungen der Personen die Sie genannt haben. Welche dieser Personen stehen sich untereinander besonders nahe?<br>1. Vorname<br>2. Vorname<br>3. Vorname<br>4. Vorname<br>5. Vorname | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ |
| Welche Personen kennen sich untereinander, so dass Sie sich auf der Straße wiedererkennen würden?<br>1. Vorname<br>2. Vorname<br>3. Vorname<br>4. Vorname<br>5. Vorname | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ | ☐<br>☐<br>☐<br>☐ |
| Welches Geschlecht haben diese Personen?<br>männlich<br>weiblich | ☐<br>☐ | ☐<br>☐ | ☐<br>☐ | ☐<br>☐ | ☐<br>☐ |

2

**Ihr Code**_____

| | | | | | |
|---|---|---|---|---|---|
| Im Durchschnitt, wie oft sprechen Sie mit den Personen, die Sie genannt haben? | | | | | |
| … täglich | ☐ | ☐ | ☐ | ☐ | ☐ |
| … wöchentlich | ☐ | ☐ | ☐ | ☐ | ☐ |
| … monatlich | ☐ | ☐ | ☐ | ☐ | ☐ |
| … seltener | ☐ | ☐ | ☐ | ☐ | ☐ |
| … weiß nicht | ☐ | ☐ | ☐ | ☐ | ☐ |
| Wie lange kennen Sie diese Personen? | | | | | |
| … weniger als 1 Monat | ☐ | ☐ | ☐ | ☐ | ☐ |
| … 2 Monate bis 1 Jahr | ☐ | ☐ | ☐ | ☐ | ☐ |
| … 1 bis 3 Jahre | ☐ | ☐ | ☐ | ☐ | ☐ |
| … 3 bis 6 Jahre | ☐ | ☐ | ☐ | ☐ | ☐ |
| … mehr als 6 Jahre | ☐ | ☐ | ☐ | ☐ | ☐ |
| … weiß nicht | ☐ | ☐ | ☐ | ☐ | ☐ |
| In welcher Beziehung stehen die Personen zu Ihnen? | | | | | |
| … Familienangehöriger | ☐ | ☐ | ☐ | ☐ | ☐ |
| … Partner | ☐ | ☐ | ☐ | ☐ | ☐ |
| … Arbeitskollege | ☐ | ☐ | ☐ | ☐ | ☐ |
| … Studienkollege | ☐ | ☐ | ☐ | ☐ | ☐ |
| … Nachbar | ☐ | ☐ | ☐ | ☐ | ☐ |
| … Freund | ☐ | ☐ | ☐ | ☐ | ☐ |
| … Bekannter | ☐ | ☐ | ☐ | ☐ | ☐ |
| … anderer, nämlich: _____ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Wie alt sind die von Ihnen genannten Personen? | | | | | |
| Sind diese Personen Studenten der Goethe Universität? | | | | | |
| … ja | ☐ | ☐ | ☐ | ☐ | ☐ |
| … ja, im ersten Semester | ☐ | ☐ | ☐ | ☐ | ☐ |
| Sind diese Personen Kommilitonen der Wirtschaftswissenschaften? | | | | | |
| … ja | | | | | |
| … ja, im ersten Semester | ☐ | ☐ | ☐ | ☐ | ☐ |
| | ☐ | ☐ | ☐ | ☐ | ☐ |

**Ihr Code_____**

**Fragen zu Ihrer Person**

**Ihr Geschlecht?** Männlich ☐ Weiblich ☐

**Wie alt sind Sie?** ☐

**Kommen Sie aus Frankfurt oder dem Rhein/Main Gebiet?**

Ja ☐ Nein ☐

**Bitte schätzen Sie:**

| | |
|---|---|
| Wie viele Freunde haben Sie im Moment? | |
| Wie viele dieser Freunde wohnen in Frankfurt oder im Rhein/Main Gebiet? | |
| Wie viele Facebook Freunde haben Sie im Moment? | |
| Wie viele Einwohner hat die Stadt/Kommune aus der Sie stammen (in etwa)? | |

**Wie schätzen Sie sich persönlich ein:**

Sind Sie im Allgemeinen ein risikobereiter Mensch oder versuchen Sie, Risiken zu vermeiden?

**Gar nicht risikobereit** — **Sehr risikobereit**

| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**Wie ist Ihre Meinung zu den folgenden drei Aussagen?**

| | Stimme voll zu | Stimme eher zu | Lehne eher ab | Lehne voll ab |
|---|---|---|---|---|
| Im Allgemeinen kann man den Menschen vertrauen | ☐ | ☐ | ☐ | ☐ |
| Heutzutage kann man sich auf niemanden mehr verlassen | ☐ | ☐ | ☐ | ☐ |
| Wenn man mit Fremden zu tun hat, ist es besser, vorsichtig zu sein, bevor man ihnen vertraut | ☐ | ☐ | ☐ | ☐ |

**Ihr Code**_____

**Experiment: Lotterieentscheidung**

Sie haben nun die Wahl sich zwischen zwei Auszahlungsoptionen einer **Lotterie** zu entscheiden. Dabei haben Sie die Möglichkeit sich in **10 verschiedenen Situationen** zwischen der **Option A** und der **Option B** zu entscheiden.

In **Option A** haben sie die Möglichkeit **entweder 20 € oder 16 €** zu gewinnen, in **Option B entweder 38 € oder 1 €**. Bitte kreuzen Sie für **jede der 10 Situationen** an, welche der beiden Optionen Sie wählen und welche damit für Sie im Falle, dass Sie ausgewählt werden, auszahlungsrelevant wird.

Am Ende des Experimentes werden wir **drei Personen** aus dem Raum per Los auswählen. Diese werden wir im Anschluss in einen Nebenraum führen und sie einen 10-seitigen Würfel werfen lassen. Dieser bestimmt zunächst die auszahlungsrelevante Situation. Anschließend wird in einem zweiten Würfelwurf die Höhe der Auszahlung bestimmt. Die ausgewählten Teilnehmer erhalten ihren **Gewinn vor Ort in bar ausbezahlt**.

Bitte treffen Sie jetzt Ihre **Entscheidungen**:

| **Situation** | **Option A** | **Option B** |
|---|---|---|
| **1. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1 anzeigt<br>16.00 € wenn Würfel 2-10 anzeigt | 38.00 € wenn Würfel 1 anzeigt<br>01.00 € wenn Würfel 2-10 anzeigt |
| **2. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-2 anzeigt<br>16.00 € wenn Würfel 3-10 anzeigt | 38.00 € wenn Würfel 1-2 anzeigt<br>01.00 € wenn Würfel 3-10 anzeigt |
| **3. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-3 anzeigt<br>16.00 € wenn Würfel 4-10 anzeigt | 38.00 € wenn Würfel 1-3 anzeigt<br>01.00 € wenn Würfel 4-10 anzeigt |
| **4. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-4 anzeigt<br>16.00 € wenn Würfel 5-10 anzeigt | 38.00 € wenn Würfel 1-4 anzeigt<br>01.00 € wenn Würfel 5-10 anzeigt |
| **5. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-5 anzeigt<br>16.00 € wenn Würfel 6-10 anzeigt | 38.00 € wenn Würfel 1-5 anzeigt<br>01.00 € wenn Würfel 6-10 anzeigt |
| **6. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-6 anzeigt<br>16.00 € wenn Würfel 7-10 anzeigt | 38.00 € wenn Würfel 1-6 anzeigt<br>01.00 € wenn Würfel 7-10 anzeigt |
| **7. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-7 anzeigt<br>16.00 € wenn Würfel 8-10 anzeigt | 38.00 € wenn Würfel 1-7 anzeigt<br>01.00 € wenn Würfel 8-10 anzeigt |
| **8. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-8 anzeigt<br>16.00 € wenn Würfel 9-10 anzeigt | 38.00 € wenn Würfel 1-8 anzeigt<br>01.00 € wenn Würfel 9-10 anzeigt |
| **9. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-9 anzeigt<br>16.00 € wenn Würfel 10 anzeigt | 38.00 € wenn Würfel 1-9 anzeigt<br>01.00 € wenn Würfel 10 anzeigt |
| **10. A** ☐ oder **B** ☐ | 20.00 € wenn Würfel 1-10 anzeigt | 38.00 € wenn Würfel 1-10 anzeigt |

**Vielen Dank für Ihre Teilnahme!!! Bitte legen Sie nun den Fragebogen umgedreht auf Ihren Tisch und warten Sie auf die Auslosung…**

5

# 4.C Experiment instructions

Cover sheet of the experiment instructions

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

**Anleitung zum Experiment**

Herzlich Willkommen zum Experiment und vielen Dank für Ihr Erscheinen. Sie können in diesem Experiment Geld verdienen. Die Höhe Ihres Gewinnes hängt dabei direkt von Ihren Entscheidungen und den Entscheidungen der anderen Teilnehmer/innen ab. Es ist dabei von größter Wichtigkeit, dass Sie während des Experimentes nicht sprechen. Bitte verstauen Sie des Weiteren ihre Taschen unter dem Sitz und schalten sie ihre Mobiltelefone ab. Alle Ihre Entscheidungen sind anonym, das bedeutet, dass andere Teilnehmer/innen keinerlei Informationen über Ihre Identität erhalten.

In diesem computergestützten Experiment gibt es mehrere Teile die Ihnen nacheinander vom Experimentator vorgelesen werden. Bitte lesen Sie sich die Anweisungen in der Reihenfolge durch, wie sie vom Experimentator vorgelesen werden, und beantworten Sie die Kontrollfragen am Ende einer jeden Stufe. Erst wenn alle die Kontrollfragen beantwortet haben, erhalten Sie die Möglichkeit Ihre Entscheidung zu treffen.

Jeder Teilnehmer erhält für sein Kommen ein Startgeld von 5 €; dies wird am Ende des Experimentes ausbezahlt. Im Verlauf des Experimentes können Sie zusätzlich Geld verdienen. Während des Experimentes sprechen wir nicht von Euro, sondern von Punkten. Ihr Einkommen wird also zunächst in Punkten berechnet. Die von Ihnen während des Experiments erzielte Gesamtpunktzahl wird dann in folgendem Verhältnis umgewandelt:

1 Punkt = 0.1 Euro

Am Ende des Experimentes erhalten Sie Ihr Gesamteinkommen in bar ausbezahlt. Die Auszahlung erfolgt privat, so dass kein anderer Teilnehmer erfährt, wie viel Sie genau verdienen.

Im Folgenden erklären wir Ihnen den genauen Ablauf des Experiments. Sollten Sie Fragen haben, heben Sie bitte die Hand und warten Sie, bis der Experimentator auf Sie zukommt. Bitte tragen Sie zunächst ihre Computernummer ein und bringen Sie diese Instruktionen bei der Auszahlung mit.

Ihre Computernummer: _____

1

# Part 1 - Experiment instructions

**Teil 1**

**Zugrundeliegendes Spiel**

In diesem Experiment sind Sie zusammen mit einem anderen Teilnehmer in einer Zweiergruppe. Jeder aus dieser Gruppe spielt zunächst in der Rolle eines Senders und dann in der Rolle eines Empfängers.

Der Sender erhält zunächst 10 Punkte. Er kann daraufhin entscheiden, wie viele er von seinen Punkten an den Empfänger überweisen möchte. Jeder Punkt den der Sender an den Empfänger überweist, wird dabei von den Experimentatoren verdreifacht. Hieraus ergibt sich:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Punkte gesendet: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Punkte empfangen: | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |

Der Empfänger erhält zunächst keine Punkte. Nachdem der Empfänger die Punkte empfangen hat, hat dieser nun die Möglichkeit zu entscheiden wie viele Punkte er dem Sender zurücksenden möchte. Bei der Rücküberweisung werden die Punkte nicht verdreifacht, d.h. der Sender erhält die Punkte die der Empfänger zurücksendet

Die Auszahlungen des Senders und des Empfängers berechnen sich wie folgt:

Auszahlung des Senders = 10 Punkte – Punkte gesendet + Punkte zurückgesendet

Auszahlung des Empfängers = (Punkte gesendet) x 3 – Punkte zurückgesendet

Sie werden dieses Spiel nun mit einem anderen zufällig ausgewählten Teilnehmer spielen. Er wird Ihr Partner in diesem Teil. Ihr Identität und die Identität ihres Partners werden zu keiner Zeit bekannt werden.

. . . . . .

**Fragen**

Bitte beantworten Sie zunächst die Fragen auf dem Bildschirm und klicken Sie auf Weiter. Erst wenn alle Teilnehmer die Fragen beantwortet haben kann das Experiment fortfahren.

**Sender**

Sie sind nun in der **Rolle des Senders**. Sie müssen entscheiden, ob und wenn ja wie viele Punkte Sie von Ihren Punkten an den Empfänger überweisen möchten. Alle Punkte die Sie nicht an den Empfänger senden bleiben bei ihnen.

Nach Beantwortung der nun folgenden Kontrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Ist die Kontrollfrage richtig beantwortet klicken Sie auf „Weiter". Erst wenn alle Teilnehmer die Kontrollfragen richtig beantwortet haben können Sie Ihre Entscheidungen treffen.

**Kontrollfrage**:

Sie sind in der Rolle des Senders. Sie haben sich entschieden 2 Punkte an ihren Partner zu schicken. Welchen Betrag an Punkten erhält Ihr Partner in diesem Spiel:

Auszahlung des Empfängers: ☐

. . . . . .

**Empfänger**

Sie sind nun in der Rolle des Empfängers. Sie müssen entscheiden, ob und wenn ja wie viele Punkte Sie an den Sender zurückschicken möchten. Wie viele Punkte Sie als Empfänger zurücküberweisen können hängt davon ab, wie viele Punkte Ihnen der Sender gesendet hat. Bitte geben Sie daher nun für jeden Betrag, den Sie vom Sender erhalten konnten, an, wie viel sie wieder zurücksenden möchten. Es gilt:

> Wenn der Sender 0 Punkte überweist können Sie keine Punkte zurücküberweisen.
>
> Wenn der Sender 1 Punkt überweist können Sie zwischen 0 und 3 Punkten zurücküberweisen.
>
> Wenn der Sender 2 Punkte überweist können Sie zwischen 0 und 6 Punkten zurücküberweisen.
>
> ….
>
> Wenn der Sender 10 Punkte überweist können Sie zwischen 0 und 30 Punkten zurücküberweisen.

Nach Beantwortung der nun folgenden Kotrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Ist die Kontrollfrage richtig beantwortet klicken Sie auf „Weiter". Erst wenn alle Teilnehmer die Kontrollfragen richtig beantwortet haben können Sie Ihre Entscheidungen treffen.

**Kontrollfrage**:

Sie sind in der Rolle des Empfängers. Der Sender hat sich entschlossen Ihnen 8 Punkte zu schicken. Sie haben sich entschieden 2 Punkte an Ihren Partner zurückzuschicken. Was sind Ihre und die Auszahlung Ihres Partners in diesem Spiel:

Auszahlung des Empfängers: ☐

Auszahlung des Senders: ☐

. . . . . .

**Schätzung**

Ihr Partner hat soeben, genau wie Sie, auch in der Rolle des Empfängers seine Entscheidung getroffen. Bitte schätzen Sie nun für jeden möglichen Betrag an Punkten, den er von Ihnen erhalten konnte, wie viel dieser bereit wäre an Sie zurück zu überweisen. Es gilt:

> Wenn Sie als Sender 0 Punkte überweisen haben konnte Ihr Partner keine Punkte zurücküberweisen.
>
> Wenn Sie als Sender 1 Punkt überwiesen haben konnte ihr Partner zwischen 0 und 3 Punkten zurücküberweisen.
>
> Wenn Sie als Sender 2 Punkte überwiesen haben konnte ihr Partner zwischen 0 und 6 Punkten zurücküberweisen.
>
> ….
>
> Wenn Sie als Sender 10 Punkte überwiesen haben konnte ihr Partner zwischen 0 und 30 Punkten zurücküberweisen.

Nachdem Sie Ihre Entscheidungen getroffen haben wird eine Ihrer Schätzungen zufällig ausgewählt. Entspricht Ihre Schätzung den Punkten die ihr Partner in diesem Fall zurückgeschickt hat, so erhalten Sie zusätzliche 8 Punkte. Weicht Ihre Schätzung um maximal 2 Punkte ab, erhalten Sie zusätzliche 4 Punkte. Weicht Ihre Schätzung um maximal 4 Punkte ab erhalten Sie zusätzliche 2 Punkte. Sollte Ihre Abweichung mehr als 4 geschätzte Punkte betragen, erhalten Sie keine Punkte

Nach Beantwortung der nun folgenden Kotrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Ist die Kontrollfrage richtig beantwortet klicken Sie auf „Weiter". Erst wenn alle Teilnehmer die Kontrollfragen richtig beantwortet haben können Sie Ihre Entscheidungen treffen.

**Kontrollfrage:**

Nehmen Sie den Fall in dem Sie 8 Punkte an ihren Partner überwiesen haben und ihr Partner sich entschlossen hat Ihnen 10 Punkte zurück zu überweisen. Wie viele zusätzliche Punkte erhalten Sie, wenn…

… Ihre Schätzung 11 betrug: ☐

… Ihre Schätzung 7 betrug: ☐

4

**Teil 2**

**Zugrundeliegendes Spiel**

In diesem Experiment sind Sie zusammen mit Ihrem **Partner aus dem ersten Teil** und einem anderen Teilnehmer, **einem neuen Partner**, in einer Dreiergruppe. Jeder aus dieser Gruppe spielt zunächst das Spiel aus dem ersten Teil in der Rolle eines Senders und dann in der Rolle eines Empfängers.

Der Sender erhält wieder 10 Punkte. Er kann daraufhin entscheiden, wie viele er von seinen Punkten an den alten Partner als Empfänger und\oder dem neuen Partner als Empfänger überweisen möchte. Jeder Punkt den der Sender an einen Empfänger überweist, wird dabei von den Experimentatoren verdreifacht.

Der Empfänger erhält wieder keine Punkte. Nachdem der Empfänger die Punkte empfangen hat, hat dieser nun die Möglichkeit zu entscheiden, wie viele Punkte er dem alten Partner als Sender oder dem neuen Partner als Sender zurücksenden möchte. Bei der Rücküberweisung werden die Punkte nicht verdreifacht, d.h. jeder Sender erhält die Punkte die der Empfänger zurücksendet.

Ihr Identität und die Identität ihres alten sowie ihres neuen Partners werden zu keiner Zeit bekannt werden.

. . . . . .

**Sender**

**[NoVar\RG]** Sie sind nun in der **Rolle des Senders**. Sie müssen entscheiden, ob und wenn ja wie viele Punkte Sie von ihren Punkten an den alten Partner als Empfänger und\oder den neuen Partner als Empfänger überweisen möchten. Die Summe ihrer gesendeten Punkte darf 10 Punkte nicht übersteigen. Alle Punkte die Sie nicht an einen Empfänger senden bleiben bei ihnen.

**[T1\T1RG]** Sie sind nun in der **Rolle des Senders**. Sie müssen entscheiden, ob Sie mit ihrem alten und\oder neuen Partner spielen möchten. Wenn ja müssen Sie sich Entscheiden wie viele Punkte Sie von ihren Punkten an den alten Partner als Empfänger und\oder den neuen Partner als Empfänger überweisen möchten. Wenn Sie sich entscheiden mit einem Partner zu spielen müssen Sie mindestens einen Punkt überweisen. Die Summe ihrer gesendeten Punkte darf 10 Punkte nicht übersteigen. Alle Punkte die Sie nicht an einen Empfänger senden bleiben bei ihnen.

Nach Beantwortung der nun folgenden Kontrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Ist die Kontrollfrage richtig beantwortet, klicken Sie auf „Weiter“. Erst wenn alle Teilnehmer die Kontrollfragen richtig beantwortet haben können Sie ihre Entscheidungen treffen.

**Kontrollfrage**:

Sie sind in der Rolle des Senders. Sie haben sich entschieden 2 Punkte an ihren alten Partner zu schicken und 3 Punkte an Ihren neuen Partner. Welche Anzahl an Punkten haben Sie und Ihre Partner nach dieser Überweisung:

| | |
|---|---|
| Ihre Anzahl: | |
| Anzahl des alten Partners als Empfänger: | |
| Anzahl des neuen Partners als Empfängers: | |

. . . . . .

**Empfänger**

Sie sind nun in der Rolle des **Empfängers**. Sie müssen entscheiden, ob und wenn ja wie viele Punkte Sie an Ihren alten Partner als Sender und an Ihren neuen Partner als Sender zurückschicken möchten. Wie viele Punkte Sie als Empfänger zurücküberweisen können hängt davon ab, wie viele Punkte Ihnen der jeweilige Sender gesendet hat. Bitte geben Sie daher nun für jeden Betrag, den Sie von den Sendern erhalten konnten, an, wie viel sie wieder zurücksenden möchten. Es gilt:

Wenn der Sender 0 Punkte überweist können Sie keine Punkte zurücküberweisen.

Wenn der Sender 1 Punkt überweist können Sie zwischen 0 und 3 Punkten zurücküberweisen.

Wenn der Sender 2 Punkte überweist können Sie zwischen 0 und 6 Punkten zurücküberweisen.

….

Wenn der Sender 10 Punkte überweist können Sie zwischen 0 und 30 Punkten zurücküberweisen.

Nach Beantwortung der nun folgenden Kontrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Ist die Kontrollfrage richtig beantwortet, klicken Sie auf „Weiter". Erst wenn alle Teilnehmer die Kontrollfragen richtig beantwortet haben können Sie Ihre Entscheidungen treffen.

**Kontrollfrage**:

Sie sind in der Rolle des Empfängers. Ihr alter Partner hat sich entschlossen Ihnen 8 Punkte zu schicken und ihr neuer Partner hat sich entschlossen Ihnen 9 Punkte zu schicken. Sie haben sich entschieden jeweils 10 Punkte an beide Partner zurückzuschicken. Was sind Ihre und die Auszahlung Ihrer Partner in diesem Spiel:

| | |
|---|---|
| Ihre Auszahlung: | |
| Auszahlung des alten Partners als Sender: | |
| Auszahlung des neuen Partners als Sender: | |

. . . . . .

**Schätzung**

Ihre Partner haben soeben, genau wie Sie, auch in der Rolle des Empfängers ihre Entscheidungen getroffen. Bitte schätzen Sie nun für jeden möglichen Betrag an Punkten, den jeder von Ihnen erhalten konnte, wie viel dieser jeweils bereit wäre an Sie zurück zu überweisen. Es gilt:

> Wenn Sie als Sender 0 Punkte überweisen haben konnte Ihr Partner keine Punkte zurücküberweisen.
>
> Wenn Sie als Sender 1 Punkt überwiesen haben konnte ihr Partner zwischen 0 und 3 Punkten zurücküberweisen.
>
> Wenn Sie als Sender 2 Punkte überwiesen haben konnte ihr Partner zwischen 0 und 6 Punkten zurücküberweisen.
>
> ….
>
> Wenn Sie als Sender 10 Punkte überwiesen haben konnte ihr Partner zwischen 0 und 30 Punkten zurücküberweisen.

Nachdem Sie ihre Entscheidungen getroffen haben werden zwei Ihrer Schätzungen, eine für jeden Partner, zufällig ausgewählt. Entspricht Ihre Schätzung den Punkten die Ihr Partner in diesem Fall zurückgeschickt hat, so erhalten Sie zusätzliche 8 Punkte. Weicht Ihre Schätzung um maximal 2 Punkte ab, erhalten Sie zusätzliche 4 Punkte. Weicht Ihre Schätzung um maximal 4 Punkte ab erhalten Sie zusätzliche 2 Punkte. Sollte ihre Abweichung mehr als 4 geschätzte Punkte betragen, erhalten Sie keine Punkte

Nach Beantwortung der nun folgenden Kontrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Ist die Kontrollfrage richtig beantwortet, klicken Sie auf „Weiter". Erst wenn alle Teilnehmer die Kontrollfragen richtig beantwortet haben können Sie ihre Entscheidungen treffen.

**Kontrollfrage:**

Nehmen Sie den Fall in dem Sie 8 Punkte an einen Ihrer Partner überwiesen haben und Ihr Partner sich entschlossen hat Ihnen 10 Punkte zurück zu überweisen. Wie viele zusätzliche Punkte erhalten Sie, wenn…

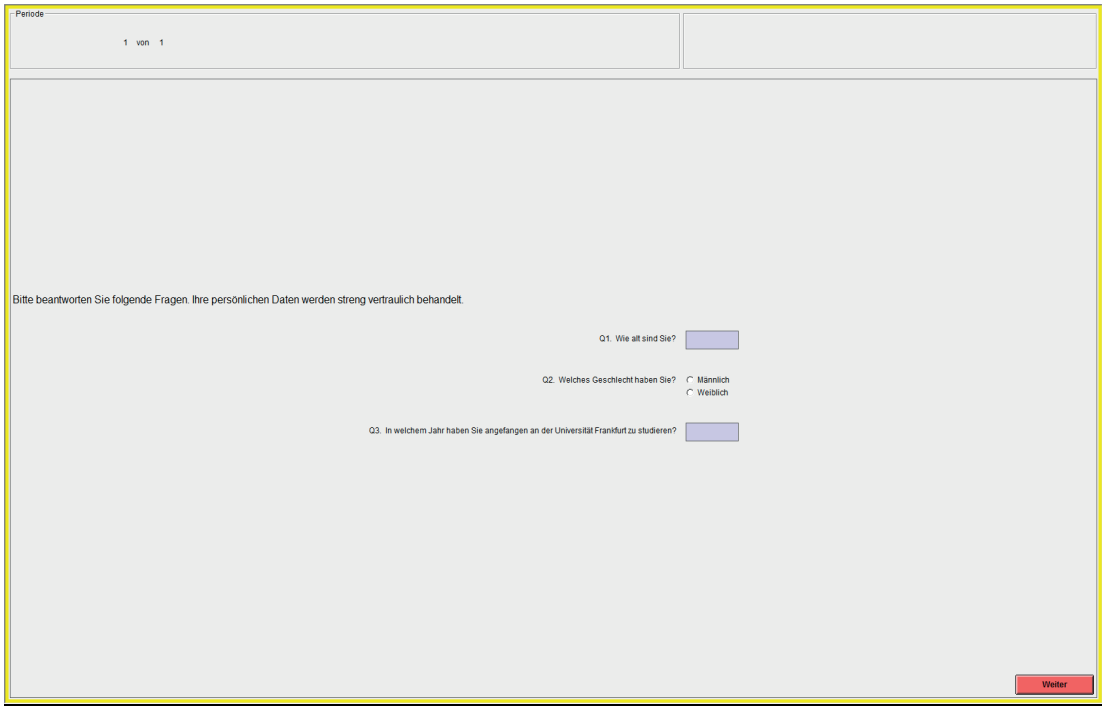
| | |
|---|---|
| … Ihre Schätzung 9 betrug: | |
| … Ihre Schätzung 13 betrug: | |

. . . . . .

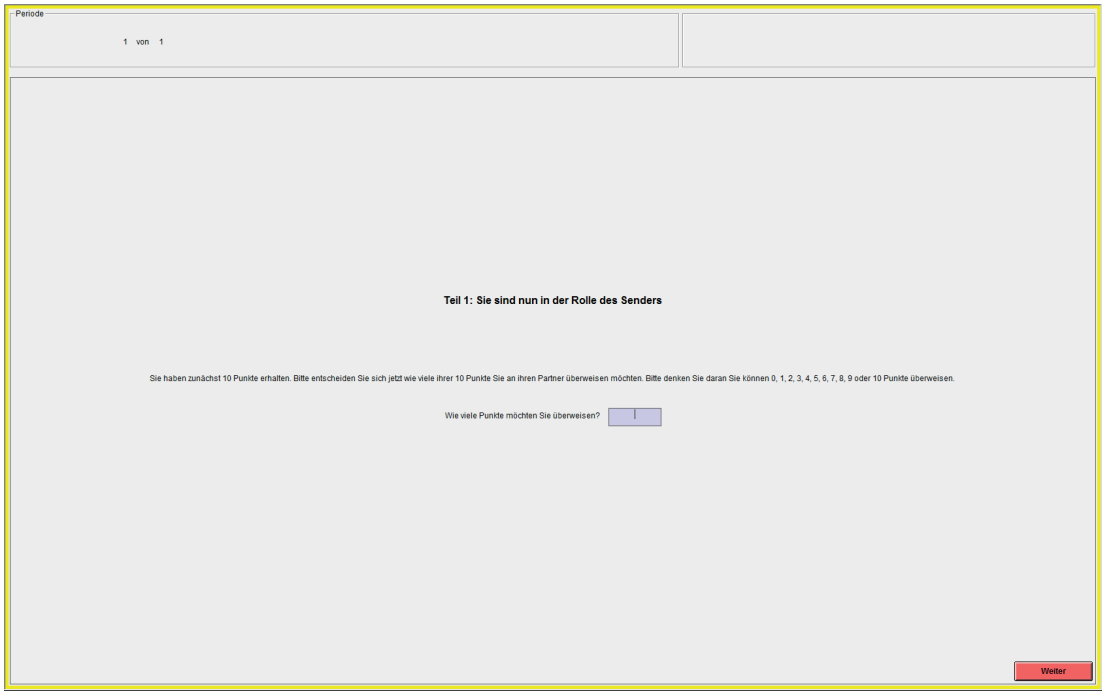
7

# 4.D Experiment screens

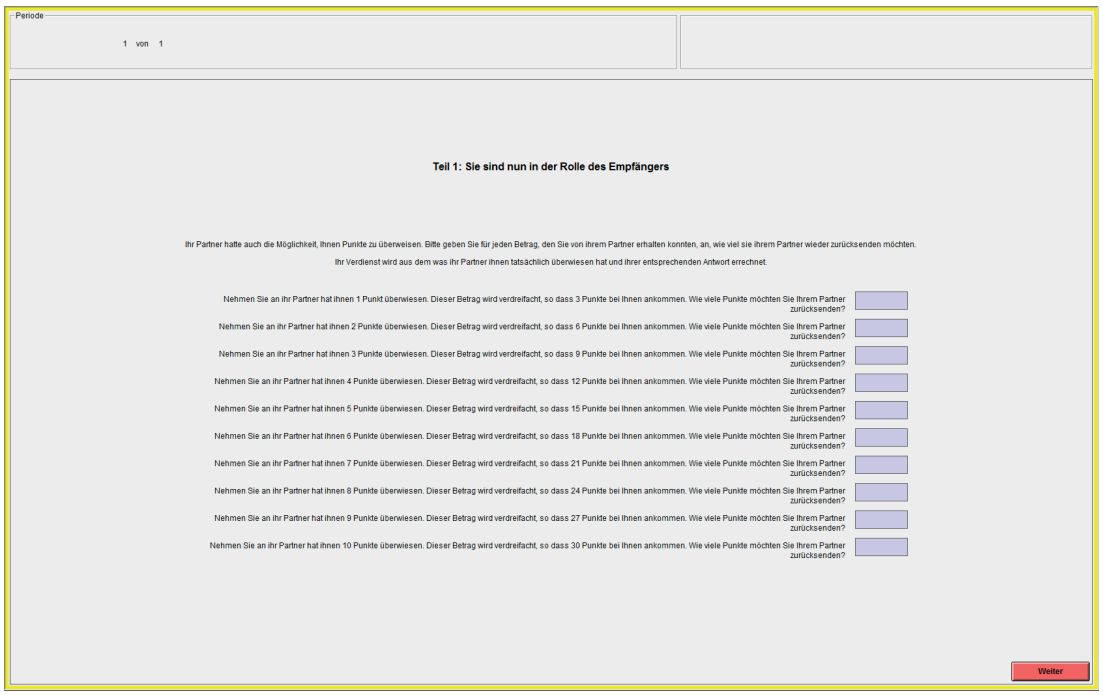
Personal information



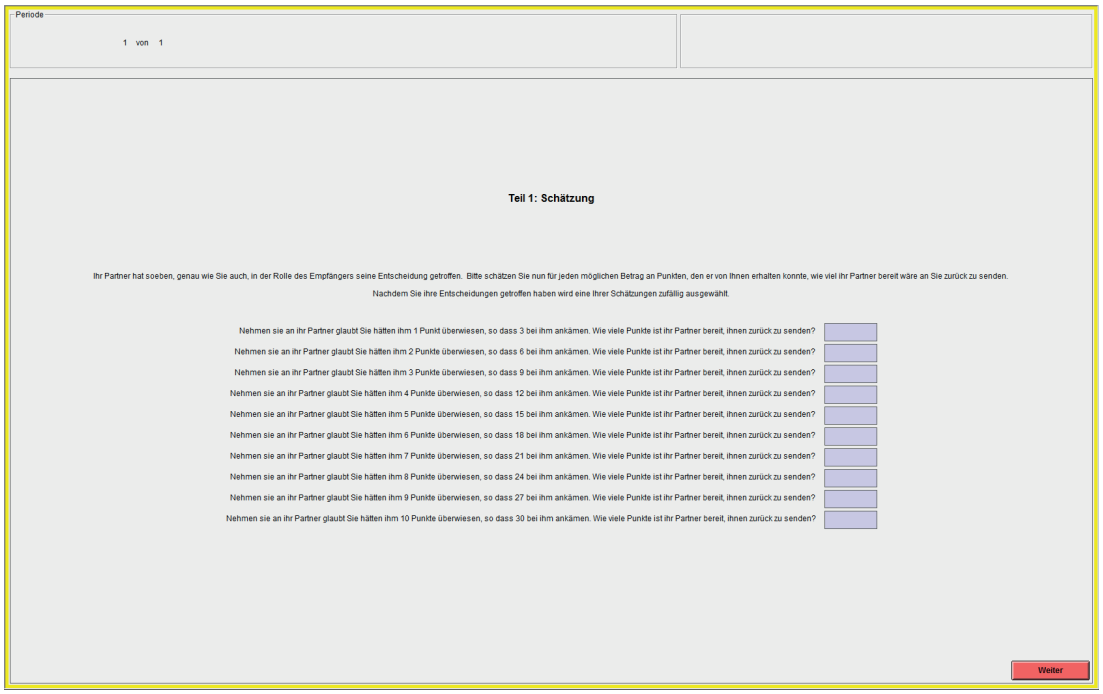

Decision as Sender in Stage 1



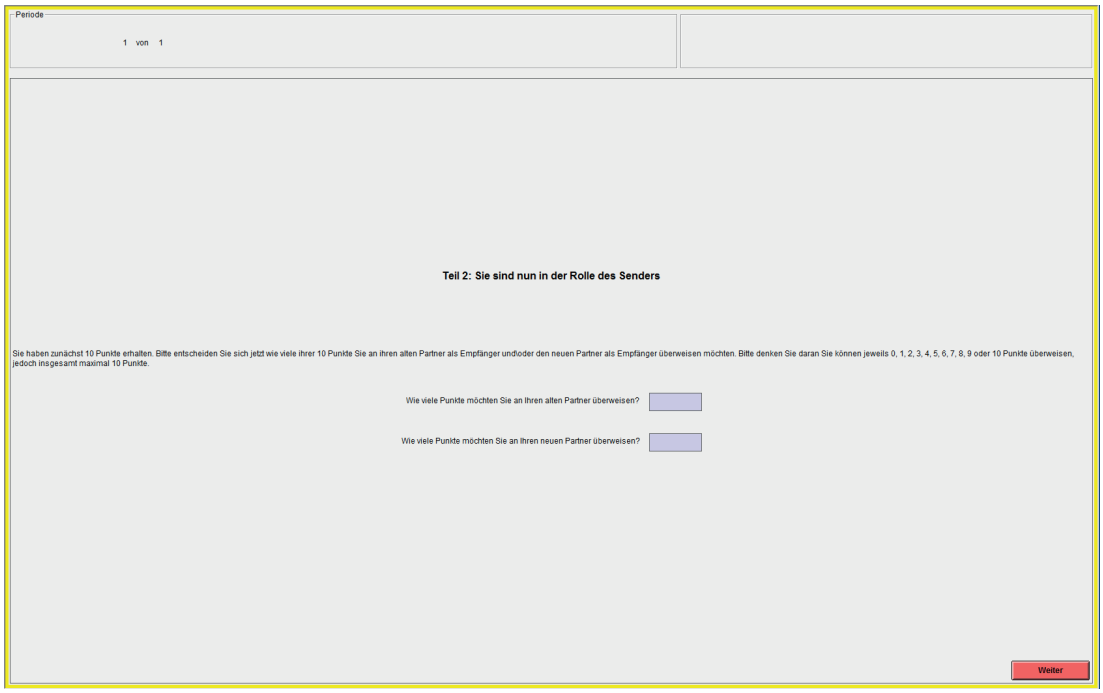
Decision as Receiver in Stage 1



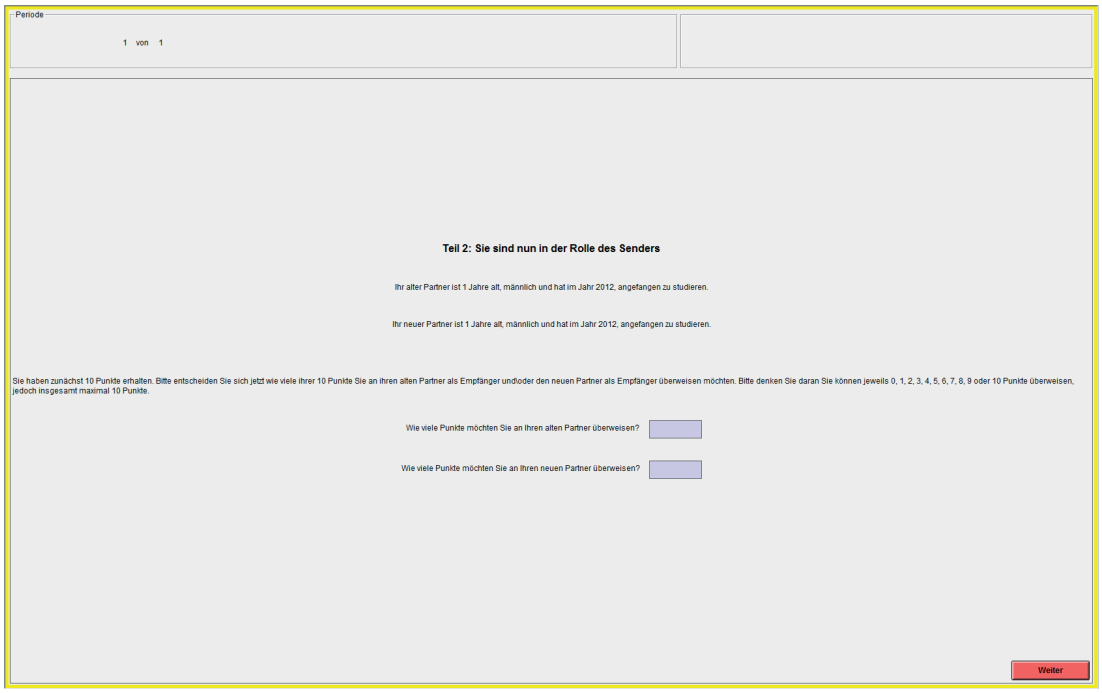

Belief about the back transfer of the Receiver in Stage 1



Decision as Receiver in Stage 2 in the NoVariation (NoVar) treatment




Decision as Receiver in Stage 2 in the Revealed Gender (RG) treatment

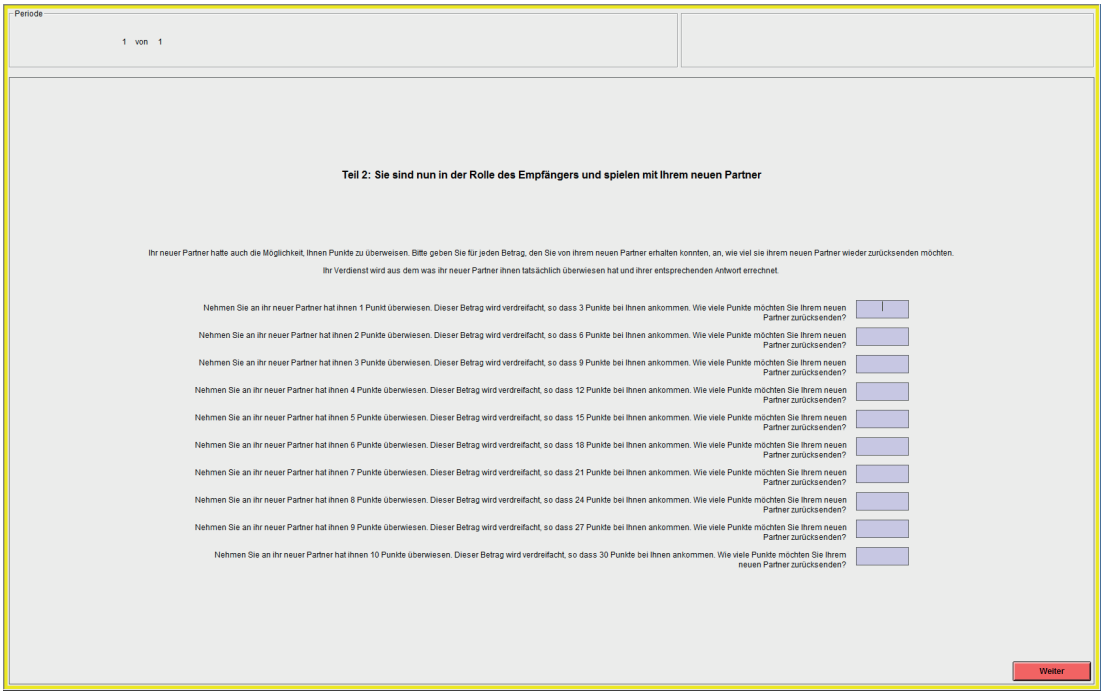


Decision as Receiver in Stage 2 in the Threshold of 1 (T1) treatment

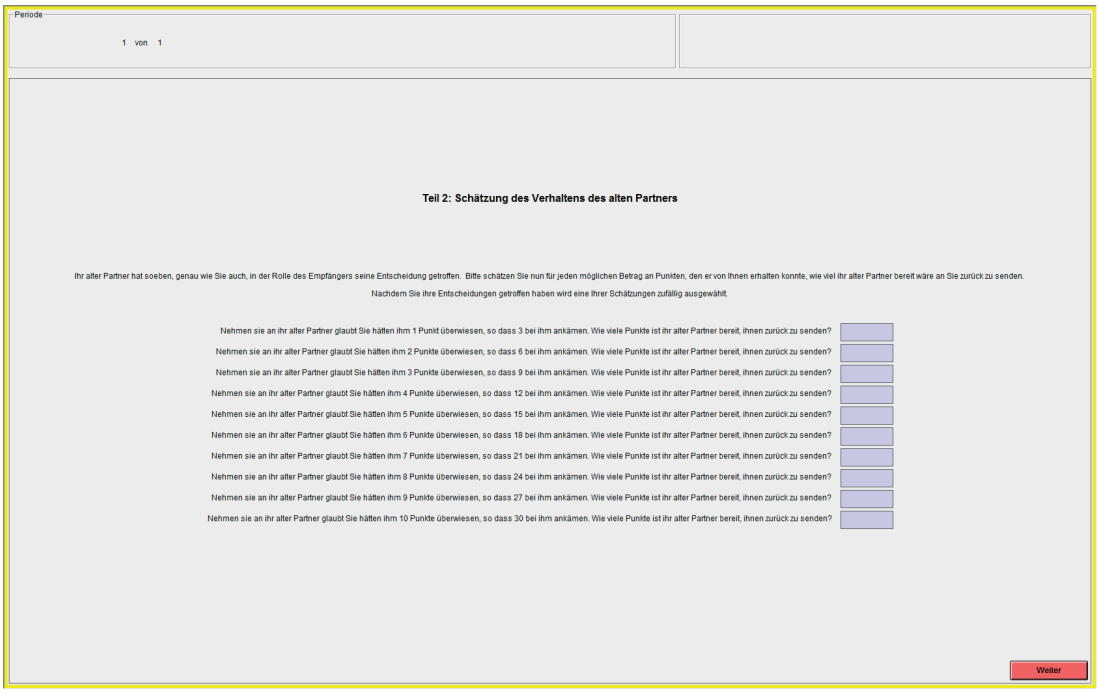

Decision as Receiver in Stage 2 in the Threshold of 1 and Revealed Gender (T1RG) treatment

Decision as Receiver in Stage 2 to the OLD Partner

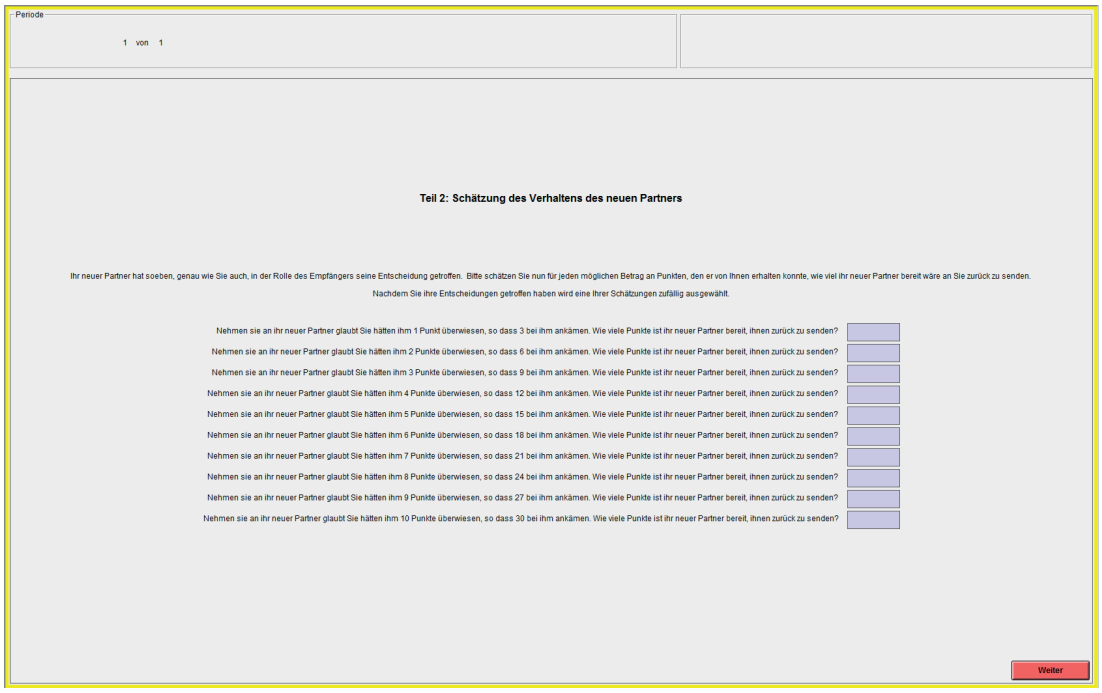

Decision as Receiver in Stage 2 to the NEW Partner



Belief about the back transfer of the OLD Partner as Receiver in Stage 2




Belief about the back transfer of the NEW Partner as Receiver in Stage 2



# Chapter 5

# Antitrust, Auditing and Leniency Programs: Evidence from the Laboratory

Mehdi Feizi
*Goethe University, Frankfurt*

Ali Mazyaki
*Goethe University, Frankfurt*

Bernard Richter
*Goethe University, Frankfurt*

**Abstract**

Using a multi-period multi-player laboratory experiment, we study the effects of *leniency programs* on cartel deterrence, stability, duration and price behavior. Our context involves the antitrust authority to have the possibility to decide upon the probability of investigation and the other players to receive partial immunity from sanctions for whistle-blower. For a repeated Bertrand pricing game, we find tendencies that the introduction of a *leniency program* causes fewer cartels to form, though cooperation in these cartels is more successful in charging prices above the static Nash equilibrium price, and that these cartels might have a longer duration. Our results are, in general, in line with other experimental work that consider *leniency programs* with full immunity.

JEL-Classification: C91, C92, D21, D43, L13
Keywords: Antitrust, Leniency, Cartels, Experiment, Individual Behavior

## 5.1 Introduction

Since cartels are illegal and thus generally extremely furtive, evidence for their formation and their existence is not easy to find. Therefore antitrust laws, like *leniency programs* for example, try to persuade cartel members to voluntarily stop their illegal ventures, denounce their activities and hand over evidence of the collusive agreements of a cartel in which they are taking part. In the case of a *leniency program* they do this in exchange for a full or partial legal immunity from sanctions as well as abstention from prosecution. Article 10 of the European Commission notice on immunity from fines and reduction of fines in cartel cases (2002/C45/03) affirms: "*immunity ... will only be granted on the cumulative conditions that the Commission did not have, at the time of the submission, sufficient evidence to find an infringement of Article 81 EC in connection with the alleged cartel*". In a more general context, the OECD Competition Committee (2002) also states that: "*the challenge in attacking hard-core cartels is to penetrate their*

*cloak of secrecy. To encourage a member of a cartel to confess and implicate it's co-conspirators with first-hand, direct "insider" evidence about their clandestine meetings and communications, an enforcement agency may promise a smaller fine, shorter sentence, less restrictive order, or complete amnesty*".

These programs, also referred to as *Amnesty Programs* or *Immunity Policies*, are supposed to serve two purposes: in the short-run they facilitate the detection of cartels and in doing so they reduce the cost of legal enforcement, and in the long-run they help discourage firms from abusing antitrust. Since 1993, when new leniency policies were launched in the US, conventional methods to detect and deter cartels have been extensively superseded by leniency policies and an unprecedented number of cartels have been successfully detected and prosecuted. The empirical literature also demonstrates that *leniency programs* have augmented significantly the number of cartels being detected. However, a larger number of detected and prosecuted cases, in principle, is not necessarily a reliable indicator for the effectiveness of antitrust policies. As first noted and theoretically developed by Motta and Polo (2003) and Spagnolo (2000), this could also be due to the overall rise of cartel activities. The population of discovered cartels is neither a suitable proxy for the actual population of cartels nor, necessarily, a proper indicator of the effectiveness of antitrust policies. For instance, unstable cartels may collapse before being caught and thus registered, which might lead to over-sampling the more stable cartels. Moreover, stable cartels may avoid detection in a better way, which would cause an over-sampling of less stable cartels. On the one hand, if the increase in the number of discovered cartels is correlated with a policy change, it could be an indicator that cartel enforcement policy has been effective in promoting detection. However, if we think the other way round there could also be more cartels discovered, due to an increased cartel formation rate. On the other hand, if a decrease in the number of cartel cases is observed this does not necessarily be an evidence of failure, because due to strong deterrence there could be fewer cartels overall.

The problematic caveat with respect to assessment of antitrust policies is that the termination of a cartel is observed, whereas the deterrence of the formation of a cartel is not. Although, one could scrutinize only discovered cartels and their characteristics, e.g., duration, and manner in which they were discovered; to a large extent, the other key performance measures, like the population of cartels or the cartel formation rate, are typically not accessible. Although, it may be possible to measure the impact of competition policy on cartel activity through a survey analysis of companies and law firms or an estimation of the effect of enforcement activity on price-cost margins, but these approaches do also have their own drawbacks. Even well-designed surveys may be biased or lack of precision, thus over- or underestimating cartel activity or cartel existence. Moreover, in order to calculate the extent of over-pricing as a result of a cartel activity a crucial fact is the knowledge upon the production cost of the firm of interest. For most of the cases, it is hardly possible to acquire data or even to find an appropriate proxy for the latter fact. Furthermore, natural experiments are not reliable and, basically, they do not exist, as it is not practicable to adjust legislation so often. Therefore, we were not able to

assess the success and observe how the result would have changed with the introduction of new policies.

These deficiencies make laboratory experiments an interesting and helpful tool in the evaluation of antitrust policies. The incorporation of appropriately constructed experimental methods gives uniquely useful insights into which institutional settings and antitrust policies are most suitable to ensure competition in markets, in particular when they study issues that theory is not or hardly able to address. Nevertheless, we need to be cautious cautious in drawing general, real-world lessons from experiments in industrial organization and particularly experiments on collusion. A situation, in which inexperienced subjects have to make decisions in a lab is essentially different from one in which firms can spend months deliberating the strategic decisions to be made. Nonetheless, in comparing two treatments with inexperienced subjects it might be possible to factor out the level of experience, as long as the treatment effect of interest does not depend on the type or the experience of the subjects and other things are kept equal. Thus, using an experiment, we study the effects of *leniency program* on cartel deterrence, cartel stability, and price behavior when the antitrust authority offers only partial immunity from sanctions to a whistle-blower. Our findings suggest that for a repeated Bertrand pricing game the introduction of a *leniency program* is bad policy in terms of cartel power reduction, whereas it is good policy in the sense of reducing the number and the stability of explicit cartels.

The remainder of this paper is organized as follows. Next, Section 5.2 reviews the related literature and provides insights into the findings of the current strand of research. Section 5.3 provides background theory and states predictions on the influence of *leniency programs*. In Section 5.4 we describe the outline of our experimental design. Section 5.4.1 sketches out the empirical methodology of the recruitment and the experimental procedure. In Sections 5.5 we then present the findings of the stated experiment. Finally, Section 5.6 concludes and discusses further possible extensions. The experimental instructions for our treatments as well as the experimental screens used are presented in the Appendix 5.A.

## 5.2 Related literature

There are two wide categories of experimental work concerning collusion of cartels and antitrust policy. First, there are experiments that are mainly motivated by theory and that aim to test predictions that result from this. Second, there are experiments with a loose connection to theoretical work that are primarily intended to identify the factors that facilitate or impede collusion in the real-world. There are ample of recent studies that offer insights on the connection of theory and experiments for the analysis of antitrust policies. The broad survey of Holt (1995), for example, provides an overview on the experimental work in the field of industrial organization in general, and also gives an extensive discussion upon collusive behavior[1].

[1]Note that Wellford (2002) also provides a more recent survey in this field.

Furthermore, Davis and Wilson (2002) summarize some recent research that illustrates the potential value of antitrust policy experiments. Especially, Normann (2006) assesses the extent and the specific contribution of laboratory experiments to antitrust law and policy. This is also accompanied by the study of Haan et al. (2009) who provide an informative survey of experiments on collusion. Especially the latter conclude that the evidence for the effect of increasing the amount of available information on the likelihood of collusion, and thus the formation of cartels, is mixed. However, they state that increased information has a positive effect on stability of markets overall. And furthermore, the availability of the history of an industry's past pricing activities appears to have at least some effect on the ability to collude.

Considering experiments in industrial economics we were aware that an important question of experimental economists is to whether behavior inside the laboratory is an appropriate indicator for behavior outside the laboratory. Levitt and List (2007) show that, to the extent that lab and real-world environments systematically differ in the nature and the extent of scrutiny by others, the particular context in which a decision is embedded, and the manner in which participants are selected, the results obtained inside and outside the lab do not necessarily correspond. Based on theory and the empirical evidence, they argue that lab experiments are a constructive tool for generating qualitative insights, but are not well suited for estimating deep structural parameters. Nevertheless, the controlled and observable environment in the laboratory provides the opportunity to study the effects on behavior and the mechanisms of policy changes. Thus an extrapolation of results into real-world applications is not necessarily possible, but we assume that behavioral patterns might be observable and transferable.

To understand the objective and the task an antitrust authority performs in the enforcement of policies and how this analyzed in the laboratory we first discuss several experimental settings. Overall it seems, that the number of firms in the industry, the product's characteristics, production costs, demand behavior, the possibility to communicate, the number of feasible periods of interaction, and the mode of competition affect both the antitrust's and the firms' ability to monitor a cartel. Thus, the choice between using Bertrand or Cournot competition as a framework is a contentious issue. Holt (1995), for example, argues against the use of Cournot competition, since it implies the use of a quite mechanical market clearing assumption. Theoretical as well as experimental research (e.g. Dolbear et al., 1968; Fouraker and Siegel, 1963; Holt, 1995; Selten et al., 1997; Wellford, 2002; Mason and Phillips, 2002; Huck et al., 2004) suggests that as the number of firms increases, i.e. firms meet and scrutinize each other's behavior less often, sustainability of collusion becomes harder and markets becomes more competitive.

Huck et al. (2004) assess experimental studies with repeated Cournot oligopolies and study the effect of the number of firms on cartel stability. In a series of oligopolistic experiments with different numbers of firms they observe some level of collusion when only two firms interact. Oligopolies with three firms tend to achieve outputs at the Nash level. Markets with four or five firms are almost never collusive and typically settle at or above the Cournot outcome. They

suggest that, while firms in duopolies sometimes collude, this appears to be difficult to realize in markets with many firms. Brandts and Guillen (2007) also demonstrate that, over time, average prices are lower with a triopoly than with a duopoly in experiments, as coordination becomes more difficult.

Furthermore, it seems that coordination and thus communication play an important role in the formation and sustainment of cartels. The Sherman Antitrust Act of 1890 prohibited all contracts and conspiracies that include cartel violations which unreasonably restrain domestic and foreign trade. The Clayton Act of 1914 was passed to supplement the Sherman Act and explicitly lists those types of business practices that distort fair competition, such as price discrimination, exclusive dealing, and mergers that substantially lessen competition. Both of these acts are now listed under Title 15 of the United States Code. The Sherman Act does not prohibit firms from convening in general but forbids them from discussing prices in such meetings. A related issue concerns as to whether the possibility for firms, to engage in non-binding communication before market interactions, makes it easier for them to collude in the laboratory. Experimental research shows that, in an environment in which firms are unable to communicate, it may be hard for them to coordinate on a collusive outcome and prices are persistently lower. Cason and Davis (1995), for instance, assess the effects of non-binding price communication. They find that communication obviously affects the price path in a multi-market environment. In their opinion, high prices, with or without communication, appear to be a result of some sellers supporting the defection of others rather than implementing the expected punishment or reward. Furthermore, Potters (2009) surveys this literature in detail and concludes that firms use the opportunity to conspire to fix prices and that this ability often has the effect of increased prices in the market. In McCutcheon (1997), the cost of communication denotes the presence of an antitrust law. She illustrates that firms may benefit from a law that makes it costly, but not very costly, to discuss prices. Another study by Andersson and Wengström (2007) finds that costly communication reduces the number of messages, increases prices, and enhances the stability of collusive agreements. Although their experimental results do not totally support those of McCutcheon (1997), their findings are in the direction of McCutcheon's conclusion that antitrust laws might work in the interest of firms and help them to collude. Finally, Haan et al. (2009) support this view that, in an environment in which firms are unable to communicate, they have little success in achieving collusion, even tacitly.

Since the interactions between colluding firms are not limited to one-shot interactions we next provide an overview on the topic of repeated interaction. The likelihood of having another round of interaction can be understood as a discount factor representing the importance of the future, and might affect the extent of collusion. Feinberg and Husted (1993) perform Cournot experiments with two different probabilities of continuing an interaction. They observe that collusion was more prevalent the higher the probability of repeated interaction was, this is in line with predictions of the behavior of fully rational firms. Nevertheless, even within a finite

horizon, it is rational to cooperate for a time and some experiments find that collusion can still be observed even when there is a fixed number of periods. Selten and Stoecker (1986) confirm that the observed behavior in a treatment with a long finite horizon is very similar to conduct in an infinitely repeated game, apart from an end-game effect. Indeed, it is common that collusion breaks down as the final period of interaction approaches.

As stated before, the introduction of *leniency programs* increased the number of cartels detected, but another important factor is the probability of being audited and thus detected. Evidence suggests that individuals often conform to regulations even with a low frequency of audits. Harrington (1988) demonstrates how a regulator could use multiple inspection groups to increase enforcement leverage, when political or other practical considerations limit the size of fines. Cason and Gangadharan (2006) report a laboratory experiment based on the dynamic model of Harrington (1988) to enlighten this puzzle, in which participants move between two inspection groups that differ in the probability of inspection and severity of fines. Their laboratory evidence illustrates that subjects do not follow the sharp predictions of the model and compliance behavior does not change as strictly as the model predicts. They consider a simple model of bounded rationality to explain these deviations from optimal behavior.

Overall, there are only a few studies that include leniency into their experimental settings and provide evidence on its effectivity. For instance, Hamaguchi et al. (2009) study several kinds of *leniency programs* through laboratory experiments. They confirm that an increase in the number of cartel members augments the number of dissolved cartels; changing the number of firms that were granted reduced fines has no significant effect; and positive enforcement, such as giving a reward for a self-reporting firm in a *leniency program*, has a great impact on the dissolution of cartel activities. They also demonstrate that limiting the number of firms which can enjoy leniency does not make people rush to terminate their collusion by reporting it. Furthermore, Hinloopen and Onderstal (2010) demonstrate through an experiment, that the *leniency program* is only partially successful in the setting of auctions. On the one hand, it deters cartel formation and leads to more cartels being disclosed. On the other hand, previously formed cartels are less likely to experience cartel defection, because members use the possibility of whistle-blowing as an additional stick to discipline cartel behavior. As a result, the *leniency program* does not increase the average winning bid, or the average winning cartel bid. In a one-shot Bertrand game, Apesteguia et al. (2007) illustrate that, the positive effects of *leniency programs* are also likely to be overstated, since a negative backlash of whistle-blowing for future cooperation is ruled out. In fact, whistle-blowing may enforce trust and collusion by providing a tool for cartelists to punish each other. Hinloopen and Soetevent (2008) extent this view and find that, with the introduction of a *leniency program* in the lab, fewer cartels are established and previously formed cartels are less successful in charging prices above the static Nash equilibrium price, and have lower survival rates, due to more frequent and more severe undercutting of the agreed upon price. Finally, Bigoni et al. (2008) design an experiment to scrutinize the effects of fines, *leniency programs* and reward schemes for whistle-blowers on

firms' decision to form cartels and on their price choices. They find that *leniency programs* might not be more efficient than standard antitrust enforcement. On the one hand, they deter a significantly higher fraction of cartels from forming in the experiment, but on the other hand, they also induce even higher prices in those cartels that are not reported, which pushes average market prices relatively up. With rewards for whistle-blowing, cartels are systematically reported, which disrupts subjects' ability to form cartels, and leads to an almost complete deterrence. They also find that, after convictions caused by reports under the *leniency program*, there are substantial fewer cartels formed and that prices are lower than when conviction is due to an independent antitrust investigation.

The key contribution of this paper is that we propose and perform an experiment in which we allow up to three firms to interact in multi-period Bertrand pricing game. Before deciding on their prices they receive the possibility to engage in an explicit communication period in which they can discuss their decisions. The novelty of our work, thus, relies in the modeling of the antitrust authority as real player who receives the possibility to decide upon the probability of investigation. Combining the cognition of previous work we present evidence whether the dynamic adaption of investigation probability and/or the use of a *leniency program* prove to deter cartels from forming, respectively destabilize cartels.

## 5.3 Background theory on leniency

Following the framework of Harrington and Chang (2009), the first firm that blows the whistle on its cartel, receives amnesty and pays a penalty of $\theta F$, where $\theta \in [0, 1]$ is the leniency policy parameter, whereas other cartel members have to pay the full fine, $F$. In our paper, the firm that reported first would receive a partial fine, in particular $\theta = 1/2$. If no firm seeks amnesty then, with probability $\beta$, the cartel is detected and each firm pays $F$ whereas, with probability $1 - \beta$, the game moves forward without any detection or fine.

Theoretically, a *leniency program* impacts expected cartel stability through three distinctive effects: *Deviator Amnesty Effect*, *Cartel Amnesty Effect*, and *Race to the Courthouse Effect*. If $\beta > \theta$, a firm that considers to cheat will use the *leniency program*, since doing so lowers the expected fine from $\beta F$ to $\theta F$. Hence, lowering $\theta$, i.e., making the program more lenient, reduces the penalty paid by a deviator and thereby increases the payoff for cheating. This effect, referred to as the *Deviator Amnesty Effect*, serves to make collusion harder to sustain. Spagnolo (2000), Spagnolo (2004) and Rey (2003) also suggest that amnesty offered to a firm might enhance the motivation to cheat on the cartel, make cartel activity less costly[2] and enforcement more effective, and simply breaks the cartel down. Moreover, lowering $\theta$ raises the collusive payoff, through it influences the expected future payoff and makes collusion easier. Firms realize that, in future periods, the likelihood of detection could be sufficiently high. Thus, they might be

[2]Since firms receive the possibility to cheat on a cartel and, thus, to receive a reduced fine, the participation in cartel activity becomes less costly.

better off terminating the cartel and each of them applying for leniency. This effect, referred to as the *Cartel Amnesty Effect*, has the implication that a more lenient program lowers the future expected discounted penalty and hence raises the expected payoff from continuing to collude.

Spagnolo (2006), Buccirossi and Spagnolo (2001) and Buccirossi and Spagnolo (2006) also demonstrate in their work that the threat of reporting the cartel to the antitrust authority to punish a member, that did not behaved in the way the cartel agreed upon, may become credible and be exploited to induce the maintenance of collusion that would otherwise not have been sustainable. In this way it increases the expected cost of misbehavior, gives cartel members the possibility to retaliate against a cheater, discourages deviations from cartel agreements, and enhances the propensity to join cartels. Therefore, for cartels that are not deterred and that remain active, *leniency programs* may reinforce and stabilize their collusive behavior.

Thus, on the one hand, through the *Deviator Amnesty Effect*, increasing leniency makes collusion more difficult, since it reduces the penalty paid by a deviator. On the other hand, through the *Cartel Amnesty Effect*, more leniency makes collusion less difficult, since it does not affect the current period's collusive profit, but rather reduces the future penalty. However, the *Deviator Amnesty Effect* is considered to be larger in a way that collusion is made more difficult with a more lenient policy, in which a policy of maximal leniency would be optimal. Motta and Polo (2003) demonstrate, for instance, that, in the optimal policy, the former effect dominates, implying *leniency programs* when an antitrust agency has limited resources.

If leniency is low, i.e. $\beta < \theta$, then, a marginal change in $\theta$ has no effect on the deviator's payoff, i.e., the *Deviator Amnesty Effect* is absent, because one would not use the *leniency program* anyway. However, this change has an impact on the expected future collusive payoff. The behavior of the firms switches from no firms applying for leniency when $\beta \leq \theta$ to firms doing so when it is optimal for all firms to apply for leniency in the case of $\beta > \theta$. Hence, a more lenient policy has raised the expected penalty.

Since a more lenient policy increases the appeal to a firm of applying for amnesty, in particular when all other firms decide to restrain from an application, it can destabilize the equilibrium, in which all firms are not using the program, and make it a dominant strategy to apply for amnesty. Thus, more leniency can result in all firms applying for amnesty, so that expected penalties are actually higher with a program that waives a higher fraction of penalties[3]. The *Race to the Courthouse Effect* then means that more leniency increases the expected present value of penalties, preventing firms from continuing to collude and thereby lowers the expected collusive payoff.

The model of Harrington (1988) is considered to be the first to generate the *Race to the Courthouse Effect*. He shows that, when leniency is sufficiently mild and a deviator would not necessarily apply for leniency, only the *Cartel Amnesty Effect* and the *Race to the Courthouse Effect* are operative, which act in opposite ways. In this case, the burgeoning game-theoretical

[3]Compared to the case where no leniency policy is place and all detected firms have to pay the full fine.

analysis is ambiguous regarding the impact of a more lenient policy, and, ex ante, it is not clear whether launching the *leniency program* would reduce or enhance the stability of cartels. Nevertheless, Harrington and Chang (2009) simulated the model of Harrington (1988) for different values of $\theta$, and shows that, the cartel rate is decreasing with $\theta$. In this paper, we hold $\theta$ constant and allow $\beta$ to be lower or higher than this and analyze its effects on cartel behavior.

## 5.4 Experimental design and timing

Our experimental design is most closely associated with Apesteguia et al. (2007), Hinloopen and Soetevent (2008), and Bigoni et al. (2008). As Hinloopen and Soetevent (2008) suggest in their conclusion, we incorporate endogenous detection probabilities, following Harrington and Chang (2009), through a new subject who is playing the role of the antitrust authority.

*Leniency programs* differ according to the conditions for awarding leniency and the extent of the leniency provided. As in Hinloopen and Onderstal (2010), we explicitly take into account the order in which cartel members apply for leniency. In this way, we open up the possibility for subjects to "race to report", by giving the fine reduction only to the first applicant. Harrington (1988) derives a rationale for only awarding amnesty to the first firm to come forward, which is a feature of the U.S. leniency program. Harrington and Chang (2009) also illustrate that offering partial leniency only to the first firm to come forward might be optimal, since leniency for additional firms does not affect the *Deviator Amnesty Effect* and raises the *Cartel Amnesty Effect*. Following this intuition, we also allow partial fine reduction only.

In our experiment, each subject represented either a firm or an antitrust authority. In each round of a treatment, the subjects playing in the role of the firms have to take two types of decisions: communication and pricing. Subjects in the role of an antitrust authority decide how much effort they will use up to investigate the market that consist of aforementioned three firms. The roles as well as the group compositions were assigned randomly at the beginning of the game and did not changed till the end of the game. Therefore, for all subjects, not only the assigned roles, but also the group members, were fixed for the course of the game.

Firms repeatedly play a discrete, homogeneous-good Bertrand pricing game, as introduced by Dufwenberg and Gneezy (2000). They can avoid competition by communicating and thus forming a cartel in which they can agree upon choosing higher prices than the competitive Nash price, $p^N = 101$. In our analysis, we consider any situation where non-competitive prices ($p > p^N$) occur, as a collusion that encompasses both explicit and tacit collusion. In Bertrand market models with homogeneous products, prices above competitive levels are commonly observed in experiments, e.g. Dufwenberg and Gneezy (2000), Baye and Morgan (2004) and Hinloopen and Soetevent (2008), even in settings with more than two firms or settings with one-shot market interaction.

Furthermore, the antitrust authority in our setting is only able to detect and to punish an

explicitly formed cartel, in which group members have chosen to discuss prices. This is in line with current legal practice that communication per se is an illegal act, even though it might not necessarily have ended up with setting a non-competitive price. Firms are unlikely to be found guilty of collusion, when they have not been explicitly attempted to communicate with each other, even if they have set a non-competitive price.

The key assumption in our setting is that the decision about collusion is not observed by the subject who is playing in the role of an antitrust authority. It is also assumed that consumer demand is completely inelastic in price and the quantity demanded is normalized to one unit. The antitrust authority maximizes the expected fine, net of enforcement costs, i.e. administrative and monitoring costs, which depend on the probability of auditing. The firms maximize their profits depending on their own price choice and the price chosen by their competitors. Since firms are symmetric, each of them has equal weight in the coalition and consequently total cartel profits will be divided equally among cartel members. Furthermore, if firms decided to communicate and this is detected by the antitrust authority or reported by one of the cartel members they have to bear the respective fine.

We designed two treatments: one without a *leniency program* (NO_LEN), which is the control treatment and one with a *leniency program* (LEN)[4]. Each subject played the game in only one treatment. Before each treatment started, we asked subjects control questions to make sure that they had understood the logic of the game properly. Subjects were matched in a so-called partner matching for the whole game. At the beginning of each treatment, subjects first played the game for 5 rounds without any possibility of interacting or colluding, except tacitly, in order to get familiar with the game environment. After completing these introductory rounds they played the game in their respective treatment for 20 rounds. Thus, the sequence of steps in each period represents as follows:

**Communication Decision**: Subjects were asked whether or not they want to communicate. A communication is possible if at least two group members decided, within 30 seconds, to communicate. Thus, the experiment permits the formation of partial cartels, with two members, as well as full cartels. The decision to communicate exposes them to the risk of being fined with some endogenous probability, which is chosen by the subject in the role of the antitrust authority. Moreover, subjects were only able communicate in their own groups and were not given to learn about the possible cartel activities in other groups. If a cartel is established, a communication window opened and allowed the participants to chat until they decided to terminate this communication or until 60 seconds had passed.

**Market Pricing Decision**: The possible price agreement reached in the communication stage was not binding. Subjects, given their same constant cost of production, $c \equiv 100$, chose

[4]Here we consider only the treatment variations that model the antitrust authority as an active player. Since we were mainly interested in the effects of the leniency programm we skipped the treatments in which the antitrust authority is exogenous and the detection probability is fixed to 15 percent. The skipped treatments basically reassembled and confirmed the findings of previous work presented in Section 5.2.

a price from the choice set $P = \{101, \ldots, 110\}$. The key assumption is that the decision on collusion is not observed by a subject who is playing the role of an antitrust authority. Once all group members selected their price, the market price, the lowest among the three prices submitted, $p_{min}$, is calculated and displayed. Subjects who have chosen this lowest price, receive net earnings of $(p_{min} - 100)/L$, where $L$ equals to the number of subjects that chose the market price. Any price above yields no revenue since demand is normalized to zero for such a price.

**Reporting Decision** (This step only arises in the LEN treatment): If communication has taken place in the current period, subjects have the opportunity to report the cartel. A firm might apply for leniency because it worries about being convicted or because it worries another firm would apply for leniency. If the cartel was reported, only the first whistle-blower would get reduction of his fine, i.e. half of the fine, whereas all other group members would pay the full fine. Subjects can thus realize negative earnings[5]. Information about the reporting decision, if a firm decided to report the explicit collusion, is then given at the end of this step.

**Auditing Decision**: If there was no self-report on a cartel, the antitrust authority would decide about the probability (in percent) with which it would audit the market. This inference based solely on the signal of the chosen market price and the preference of the player in the role of the antitrust. For instance, a high price can either be a signal of non-cooperative behavior or the consequence of collusive conduct. Therefore, similar to any decision maker under uncertainty, the authority is subject to two types of errors: prosecution of innocent competitive firms or the disregard of collusive behavior. The cost of an investigation, i.e., administrative cost, is modeled as a quadratic function of this probability:

| Probability of investigation | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|
| Cost of Investigation | 0.0 | 0.3 | 0.7 | 1.2 | 1.8 | 2.4 | 3.2 | 4.0 | 5.0 | 6.0 |

Most evidence seems to suggest a 10%, e.g., Werden and Simon (1987), to 33%, e.g., Cohen and Scheffman (1989)), chance to discover a cartel among real antitrust authority investigations. Other subjective and opinion-survey evidence reveals the probability of auditing and conviction ranging from less than 10% to 33%, e.g., Feinberg (1984). Thus, we consider the range of our detection probability offered to the subject in the role of an antitrust agency to be reasonable and in line with previous findings.

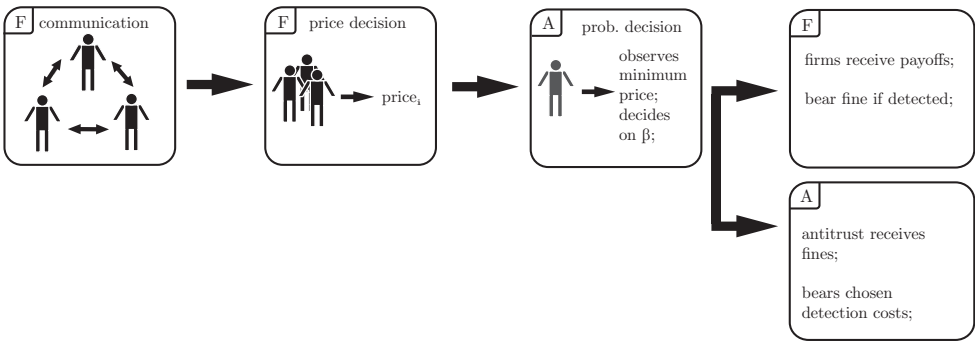
Whenever subjects communicated and thus formed an explicit cartel, the antitrust authority might detect it and convict its members for a price fixing possibility with the chosen probability. As motivated in Section 5.1 the mere act of communicating with other firms prior to a price

[5]To prevent subjects from the realization of losses we provided an additional endowment of 3 EUR in each round of the game. Thus even if they were fined they receive no more than zero earning from this round of the game. This additional endowment is announced in the instructions presented in Appendix 5.A.

setting stage might be interpreted as collusive behavior. We use this notion for our definition of an explicit cartel. Upon being caught, each firm in the cartel is condemned to pay the instantaneous penalty. The penalty scheme is a linear function of the degree of offense in the current period, $F = \alpha(p_{\min} - c)/L$, where $\alpha$ is fixed to 1.5, $L$ is the number of cartel members and $c$ is the constant cost of production. Subjects in the role of a firm in the LEN treatment who decided to report the communication activities only bear half of the fine, $F_{reporter} = (\alpha(p_{\min} - c)/L) * 1/2$.

Since periods are independent, a subject could not be fined for a communication activity and thus a cartel formation in any of the previous periods. In this sense, a firm does not run any risk of being fined unless it communicated again. At the end of each round, profits, possible fines, net payoffs and the value of participants' total earnings within that period are displayed. In the case that players experienced a fine, they were also informed whether the detection happened due to an audit or a report from a firm of their group[6].

Figure 5.4.1: The NO_LEN Treatment

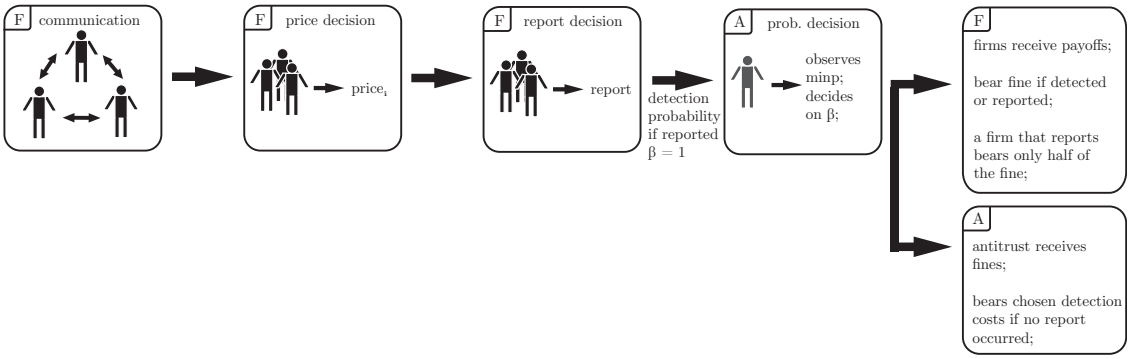



The timing of the NO_LEN treatment is presented in Figure 5.4.1. In total the treatment consisted of a group of four players: one of the subjects was selected randomly to take the role of an antitrust authority and decided upon the probability of auditing whereas the three other subjects played in the role of a firm.

Furthermore the sequence of events in the LEN treatment is presented in Figure 5.4.2. After the communication and price decision phase, subjects who participated in a cartel had the possibility to report the communication activity and thus to receive the reduced fine, $F_{reporter}$. The leniency is only granted for the first firm that decides to report. If a cartel is reported, it was automatically unveiled and all other members of the cartel were charged with the full fine $F$.

[6]This could only happen in the LEN Treatment.

Figure 5.4.2: The LEN Treatment




### 5.4.1 Empirical methodology

In order to analyze our data, we have to deal with repeated observations of the same subjects and groups in order to assess the collusive behavior of subjects across the treatments. Therefore, following Bigoni et al. (2008), we refer our results to three data sets, which were constructed from the experimental decisions.

First, holding the subject constant and observing their decisions, we analyze the data at an individual level, which represented individual decisions of the subjects, e.g. the decision to communicate or the decision to deviate from a collusive agreement. This allows us to focus on the pricing as well as on the reporting decisions. Moreover, we were able to analyze the reactions to cheating, price undercutting and cartel collapse.

The second data set provides information at the group level, which refers to variables that always take the same value for the all members of a cartel, e.g. the presence of a cartel in a given period, or the fact that a given cartel is detected by the antitrust authority in the past period. Thus, we create a data set at the aggregated level, which allows us to evaluate the duration of cartel activity. Here we distinguish between explicit and tacit collusion as well as total cartel stability. Since our number of independent observation is reduced the aggregated level, we are only able to report and analyze the summary statistics of the variables of interest.

Given the structure of our game, we need to account for interdependencies between two observations from the same individual over time, as well as for group constellations. Therefore, we use panel regressions in which we control for for individual or group specific characteristics as well as for period effects to capture whether effects are driven by certain individuals or groups that incorporate special behavioral patterns.

All regressions include an independent treatment dummy variable, which represents as 1 for the LEN treatment. The first specification for all regressions, that is represented in the first column of each regression table, relies on the following econometric specification for the individual level

$$y_{pt} = \beta_0 + \beta_0 LEN_{pt} + \gamma_{pt} + \varepsilon_{pt} \tag{5.1}$$

and the following for the group level

$$y_{gt} = \beta_0 + \beta_0 LEN_{gt} + \gamma_{gt} + \varepsilon_{gt} \tag{5.2}$$

In this specifications $\gamma$ represents a matrix of personal effects, respectively group effects, which is fixed over time and $p$, $t$ and $g$ are indices for subjects, periods and groups. We assume this to control for possible personal fixed effects. Since we only compare two treatments, LEN dummy is 1 if subject $p$ or group $g$ is in the leniency treatment and 0 if the treatment offers no possibility to apply for leniency. In order to identify further effects, we extended our regressions with further explanatory and control variables.

To analyze the change of prices and market prices, we ran a series of censored Tobit panel regressions. Furthermore, we use the more sophisticated Probit panel regression model to analyze the decision to communicate, the decision to deviate and the probability of cartel formation, since these represent binary decision. Since we were interested in the influence of leniency effects and changes in prices and cartel formation on the behavior of subjects, this allows identifying Logit based probabilities that overcome the problems of a linear probability model. Additionally, to compare the decisions of the individuals and their aggregates, we use the Wilcoxon Mann-Whitney U-Test, a nonparametric equivalent to the T-Test, to check whether two independent samples have been drawn from the same population and whether they have the same distribution.

## 5.5 Experimental results

The experiment was conducted at the Frankfurt Laboratory for Experimental Economics (FLEX), using the computerized program z-Tree developed by Fischbacher (2007). In total we invited 88 subjects; 44 subjects representing 11 groups in the NO_LEN treatment and 44 subjects representing 11 groups in the LEN treatment. Subjects were drawn from a large pool of participants consisting of undergraduate students from different disciplines as well as employed persons. Each participant was matched with the same other subjects for all 20 periods. Subjects were paid their cumulative earnings in Euros[7]. The length of the sessions was roughly one hour. Table 5.5.1 shows that the key indicators are different for the two treatments.

Cartel formation represents the fraction of communications established overall groups along all periods. The variable firms price indicates the average price chosen by the firms, whereas the market price represents the average lowest price of firms among all periods. Furthermore, we provide two variables on the characteristics of a cartel, it's instability and the rate of cartel detection. The first indicates how often subjects in the role of a firm decided to underprice the

[7]with the conversion rate 1 point = 1 Euro.

Table 5.5.1: Comparison of Treatments

| | AA without Leniency | AA with Leniency | Mann-Whitney Test z |
|---|---|---|---|
| Cartel Formation | 0.25 | 0.24 | 0.070 |
| | (0.017) | (0.017) | [0.9443] |
| Firms Price | 103.28 | 103.89 | -2.904 |
| | (0.127) | (0.135) | [0.0037] |
| Market Price | 102.26 | 103.57 | -3.208 |
| | (0.186) | (0.220) | [0.0013] |
| Cartel Instability | 0.375 | 0.457 | 1.500 |
| | (0.038) | (0.039) | [0.1335] |
| Cartel Detection | 0.05 | 0.07 | -0.791 |
| | (0.009) | (0.010) | [0.4292] |

Note: Parentheses encompass standard errors; brackets include p-values.

own cartel after they have explicitly chosen to communicate. The later provides information about the detection rate of the antitrust agency and thus the fraction of revealed cartels.

Next, we discuss the comparison between subjects in the NO_LEN and the LEN treatment in a more detailed way, following the natural sequence of the life of a cartel. First, we consider the results for cartel formation, in which we analyze the subjects' decision to communicate. Second, we assess the power of the cartels formed, in the sense of how much they are able to sustain a price above the competitive price. Third, we show results for cartel stability. Fourth and last, we examine the detection power of the antitrust authority together with cartel duration.

**Cartel Deterrence**: One of the main aims of antitrust policies is to deter cartels from forming. Therefore, the rate of cartel formation in general and the decision to communicate in our experiment in particular, are proper indicators of cartel deterrence. In our experiment, the antitrust policy has insignificantly more deterrence effect when it introduces the *leniency program*.

The first row of Table 5.5.1 also denotes that communication, which is considered as the initiation of a cartel, has a higher rate in the NO_LEN treatment, whereas cartel activity in LEN treatment drops in terms of the percentage of decisions to communicate. Therefore, cartel deterrence is more effective under the LEN treatment, in the sense that there seems to be a weak deterrence effect.

Figure 5.5.1 plots the percentage of cartels formed after communication along the periods. We observe that some periods more cartels were formed under the leniency treatment than if leniency is absent, although this difference is not significant. To analyze the driving force behind this observed patterns, we present a Probit regression on cartel formation as a dependent variable in Table 5.5.2 that includes the decisions and outcomes from the period before.

The coefficient of the treatment dummy in the specification (1) of Table 5.5.2 confirms the fact that firms form fewer cartels in the LEN treatment, though this difference is not significant.

Figure 5.5.1: Fraction of Total Cartel Formation

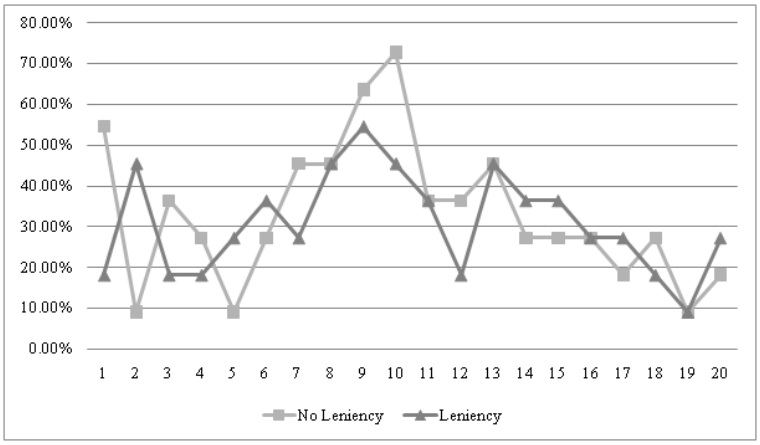



Table 5.5.2: Cartel Formation

| Dependent Variable: Cartel Formation | (1) | (2) |
|---|---|---|
| Treatment Dummy | -0.016 | 0.019 |
| | (0.210) | (0.161) |
| Explicit Cartel (-1) | | 0.997*** |
| | | (0.116) |
| Self Underpricing (-1) | | -0.267 |
| | | (0.189) |
| Being Cheated (-1) | | -0.159 |
| | | (0.160) |
| Constant | -0.872*** | -1.104*** |
| | (0.150) | (0.119) |
| Personal Effects | Yes | Yes |
| Period Effects | Yes | Yes |
| Number of Independent Observations | 66 | 66 |

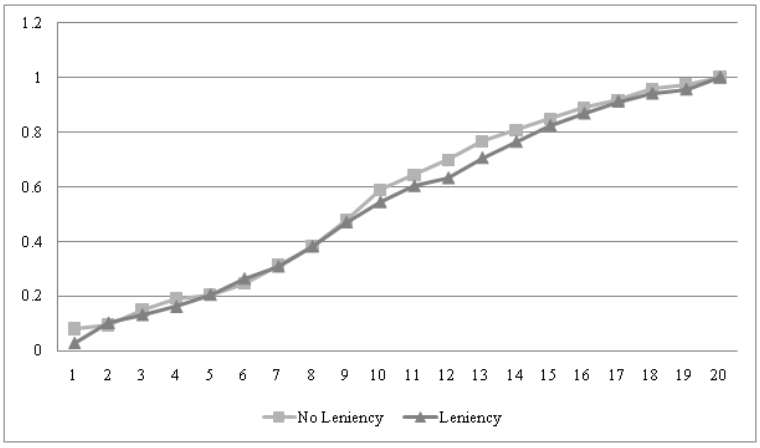
Note: Random-effects probit regression of the individual panel dataset; Treatment dummy is coded 1 for subjects deciding in the LEN treatment and 0 for the NO_LEN treatment; Explicit cartel (-1) indicates the decsision to start a communication in the former period; The dummies for Self Underpricing (-1) and Being Cheated (-1) are coded as 1 if a person cheated the other group members in the former period or respectivly he is cheated by others;statistical significance is indicated as: * p<0.1, ** p<0.05 and *** p<0.01

In specification (2), we add control variables to test whether a formed cartel and its stability in the previous period had any effect on the cartel formation probability in the current period. As we expected, we observe the trigger strategy, in which the probability to form a cartel increases when a cartel was formed beforehand and it decreases when subjects face actions that destabilized the formed cartel, although significance for the later fact is low.

This raises the question whether the experimental differences between the NO_LEN and the LEN treatments lead subjects in the latter treatment to be more persistent in their choice not to collude. Figure 5.5.2 examines this question by mapping the cumulative distribution function (CDF) of the number of times each subject consents to discussing prices. In the NO_LEN treatment, all subjects assent to discuss prices at least once, whereas in the LEN

treatment some subjects are not willing to communicate at all. Their persistence successfully blocks some of the cartels, although, as is visible from the graph, the difference between the CDF's is not significant.

Figure 5.5.2: CDF of Average Total Cartel Formation




This result is partially consistent with previous experimental results. Hinloopen and Soetevent (2008) obtain a similar pattern, with no significant differences between their antitrust and leniency treatments with respect to the rate of communication attempts. Apesteguia et al. (2007) also find a reduction in the percentage of formed cartels, when leniency is introduced. Harrington and Chang (2009) demonstrate that, by allowing the antitrust authority to adjust its enforcement policy, a *leniency program* can lower the cartel rate. They illustrate that a *leniency program* is highly detrimental to marginally stable cartels, as they no longer form, because the possibility of whistle-blowing being seen as a credible threat. This effect serves to reduce the cartel formation rate.

**Cartel Power**: We assess whether established cartels were able to exercise their power and raise their price above the competitive one. As reported in Table 5.5.1, both firm and market prices have increased significantly in the LEN treatment relative to the NO_LEN one ($p = 0.001$). Figure 5.5.3 presents the average prices chosen by the subjects in the different periods whereas Figure 5.5.4 illustrates the minimum price of each group in each period. These Figures also indicate that the LEN treatment appears to be ineffective in making cartels less powerful and reducing the market price.

In order to shed light on the source of this effect, we ran two Tobit panel regressions on the firms' price at the individual level and the market price at the group level. The first specification of Table 5.5.3 verifies that introducing leniency has a positive effect on prices chosen by the firms, although this effect is not significant due to the low number of observations. This reveals that, in principal, for cartels which have survived, *leniency programs* induce them to charge even higher prices. If we control for the fact that cartel has been explicitly formed, we find significant positive effect on price behavior, in the specification (2) of Table 5.5.3, whereas the

Figure 5.5.3: Average Firms' Prices along the Periods

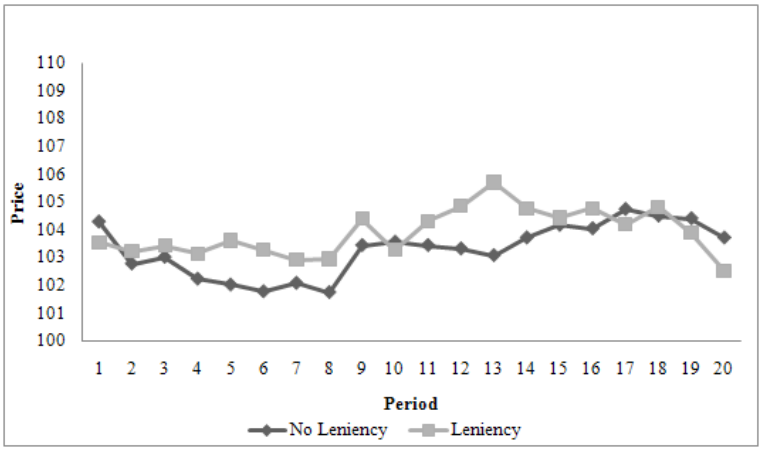
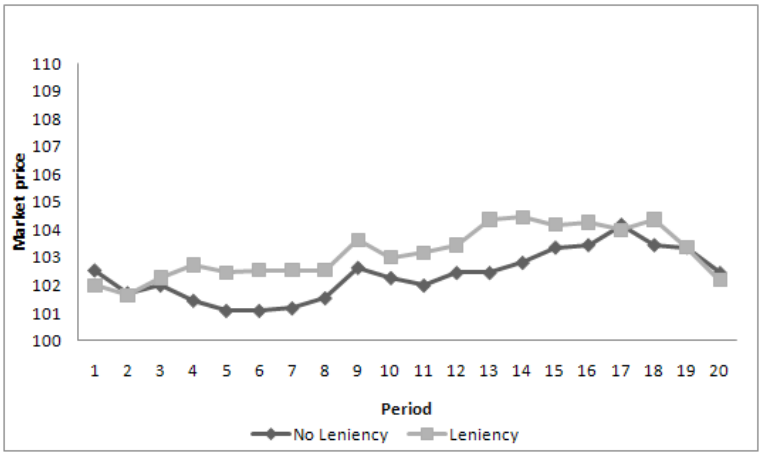



Figure 5.5.4: Market Prices along the Periods




significant negative coefficients of destabilizing actions in the period before, in the specification (3) of Table 5.5.3, might be interpretable as a trigger strategy in the sense of lowering the price when a subject cheated or has been cheated.

At the group level, we observe the same pattern for market price, namely, the treatment dummy has a positive effect on the market price, specification (1) of Table 5.5.4, as long as we have not taken into account whether these are collusive prices or whether there has been cheating in the previous period. Again we consider the low number of independent observation to cause the insignificant difference between the treatments. Therefore, one can only hypothesize that formed cartels have higher market power under the *leniency program*.

Interestingly, when we check for the completeness of a cartel in specification (2), full cartels with three members augment the market price. If one subject in a group does not agree to join the cartel, a partial cartel with two members is not successful in increasing the price, since the outsider with a lower price attracts the whole market demand. Furthermore, specification (3) confirms the same trigger strategy as beforehand.

Figure 5.5.5 depicts the cumulative distribution function of prices. The CDF of market

Table 5.5.3: Firms' Price

| Dependent Variable: Firms' Price | (1) | (2) | (3) |
|---|---|---|---|
| Treatment Dummy | 0.780 | 0.779 | 0.807 |
| | (0.611) | (0.594) | (0.645) |
| Explicit Cartel | | 0.948*** | 1.057*** |
| | | (0.230) | (0.235) |
| Self Underpricing (-1) | | | -2.061*** |
| | | | (0.411) |
| Being Cheated (-1) | | | -1.361*** |
| | | | (0.339) |
| Constant | 103.487*** | 103.248*** | 103.449*** |
| | (0.432) | (0.423) | (0.461) |
| Personal Effects | Yes | Yes | Yes |
| Period Effects | Yes | Yes | Yes |
| Number of independent observations | 66 | 66 | 66 |

Note: Random-effects tobit regression of the individual panel dataset; Treatment dummy is coded 1 for subjects deciding in the LEN treatment and 0 for the NO_LEN treatment; Explicit cartel indicates the decsision to start a communication; The dummies for Self Underpricing (-1) and Being Cheated (-1) are coded as 1 if a person cheated the other group members in the former period or respectivly he is cheated by others; statistical significane is indicated as: * p<0.1, ** p<0.05 and *** p<0.01

Table 5.5.4: Market Price

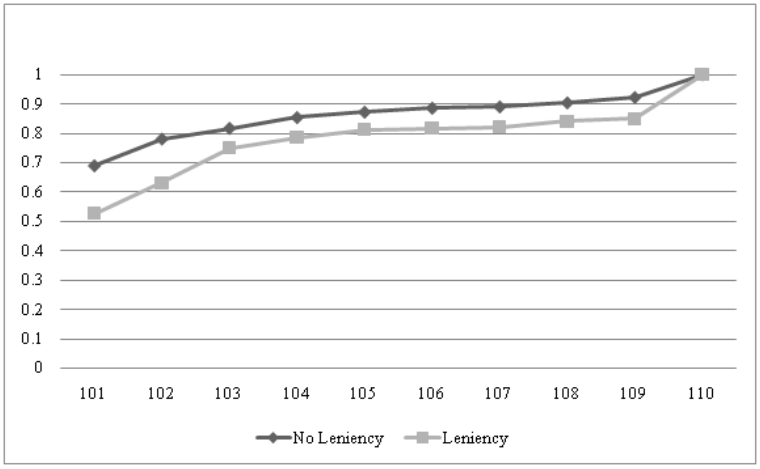
| Dependent Variable: Market Price | (1) | (2) | (3) |
|---|---|---|---|
| Treatment Dummy | 0.903 | 0.804 | 0.861 |
| | (0.990) | (0.944) | (1.019) |
| Full Cartel | | 1.239*** | 1.169** |
| | | (0.455) | (0.461) |
| Partial Cartel | | -1.146*** | -0.972*** |
| | | (0.302) | (0.310) |
| Self Underpricing (-1) | | | -1.739*** |
| | | | (0.513) |
| Being Cheated (-1) | | | -1.351*** |
| | | | (0.459) |
| Constant | 102.457*** | 102.640*** | 102.825*** |
| | (0.700) | (0.674) | (0.728) |
| Group Effects | Yes | Yes | Yes |
| Period Effects | Yes | Yes | Yes |
| Number of independent observations | 22 | 22 | 22 |

Note: Random-effects tobit regression of the group panel dataset; Treatment dummy is coded 1 for subjects deciding in the LEN treatment and 0 for the NO_LEN treatment; Explicit cartel indicates the decsision to start a communication; The dummies for Self Underpricing (-1) and Being Cheated (-1) are coded as 1 if a person cheated the other group members in the former period or respectivly he is cheated by others; statistical significane is indicated as: * p<0.1, ** p<0.05 and *** p<0.01

prices for the LEN treatment clearly first-order stochastically dominates the CDF of market prices for the NO_LEN treatment, since firms chose higher prices in the LEN treatment than in the NO_LEN treatment. Taking the results from Figure 5.5.3 into account, this confirms that *leniency programs* might not only increase the market price but also the firms' submitted prices and it is not unambiguously positive despite its deterrence effect.

This result is, in fact, in line with Bigoni et al. (2008), Spagnolo (2006), Buccirossi and Spagnolo (2001), Buccirossi and Spagnolo (2006) and Ellis and Wilson (2001). They suggest that antitrust policies featuring a *leniency program* could raise the prices in those cartels that

Figure 5.5.5: CDF of Market Price




are not deterred and remain active. Their idea, though it is not completely persuasive, is that it seems that leniency policies generate trust among cartel members, since they now have an instrument of credible threat. This might be an indicator for further research in order to check whether trust and trustworthiness contribute to a higher collusive price. We find an explanation of this pattern to be that a refusal to communicate, when it is costly, does not necessarily signal reluctance to cooperate. Therefore, leniency policies may also facilitate tacit collusion and thereby induce higher prices.

**Cartel Stability**: Since the price agreed upon in the communication phase is not binding, any firm has an incentive to cheat other cartel members and attract the whole market demand by undercutting the collusive price. A cartel agreement is internally stable if it is self-enforcing and no cartel member is tempted to deviate from it, due to a credible punishment threat[8]. An example of a pair of strategies that could sustain collusion in equilibrium is the well-known trigger strategy: Set the collusive price as long as it has been set before and choose the competitive price forever, once anybody defects.

In order to get deeper insights into these assumptions, we dug into the chat logs of subjects. There are several lines of communication which confirm that they have, in fact, intentionally followed this trigger strategy, e.g., "*in den nächsten runden immer 110 und nicht kommunizieren*" (for the next rounds always 110 and don't communicate), "*dann können wir nicht bestraft werden und kriegen immer nen hohen payoff*"(in that case we cannot be punished and will always get a high payoff) and "*ja wenn jemand abweicht mach ich immer nur 101*"(if someone deviates, I will always play 101).

[8]If played in a one-shot interaction this is comparable to a prisoner's dilemma game, for which setting the competitive price is the dominant strategy for both players. In a repeated game without information when the game is going to end, if each player receives a higher payoff when the collusive price is chosen, the competitive price strategy might be dominated by the collusive price strategy in the case the probability of continuation is high enough.

Table 5.5.2 shows that subjects seem to be significantly sensitive to the state of the last period in terms of self under-pricing and whether they have been cheated on. This also illustrates a trigger strategy, namely being part of an explicit cartel drastically boosts the chance of continuing collusive behavior, whereas deviating from the collusive agreement in the last period significantly reduces the likelihood of forming a new cartel. Moreover, the coefficients of the lags of self under-pricing and being cheated on in specification (3) of Table 5.5.4, indicate a trigger strategy as well. The differences between the firm's agreed-upon prices, Figure 5.5.3, and market prices, Figure 5.5.4, rigorously reveal the impact of defection on the agreed-upon prices. Apparently, the instability effect of under-pricing is more visible under the LEN treatment. The Mann-Whitney Tests of Table 5.5.1 also confirm this result, although only at the 20 percent level.

Table 5.5.5: Report

| Dependent Variable: Report | (1) | (2) | (3) |
|---|---|---|---|
| Market Price | -0.016 | 0.002 | |
| | (0.072) | (0.075) | |
| Own Price - Market Price | | | 0.182*** |
| | | | (0.067) |
| Self Underpricing | | 1.604*** | 1.791*** |
| | | (0.407) | (0.450) |
| Constant | -1.178 | -3.131 | -3.254*** |
| | (7.449) | (7.728) | (0.560) |
| Personal Effects | Yes | Yes | Yes |
| Period Effects | Yes | Yes | Yes |
| N | 33 | 33 | 33 |

Note: Random-effects probit regression of the individual panel dataset; Dependent variable indicates whether a report is submitted or not; statistical significance is indicated as: * p<0.1, ** p<0.05 and *** p<0.01

Table 5.5.5 shows a Probit panel regression on the probability of reporting. It shows that subjects report the cartel when they undercut the price agreed upon, i.e., self under-pricing, or another subject cheats, i.e., subtraction of the market price from own price. Nevertheless, being cheated on drastically increases the probability of reporting compared to self under-pricing. This also points towards the *Deviator Amnesty Effect* being larger than the *Cartel Amnesty Effect* which is predicted by theory and thus undermines our findings.

**Cartel Detection**: One of the key aspects of our paper is the introduction of the antitrust authority as an active player. In Table 5.5.6, we run an OLS panel regression on the probability of investigation[9] as the dependent variable and illustrate how the chosen levels of investigation depends on the observed market price.

[9]We chose to use OLS regressions for simplicity, since the variable is stepwise continuous.

Table 5.5.6: Cartel Detection

| Dependent Variable: Probability of Auditing | (1) | (2) |
|---|---|---|
| Treatment Dummy | -0.005 | -0.016 |
| | (0.021) | (0.019) |
| Market Price | | 0.015*** |
| | | (0.002) |
| Constant | 0.290*** | -1.292*** |
| | (0.039) | (0.162) |
| Personal Effects | Yes | Yes |
| Period Effects | Yes | Yes |
| Number of independent observations | 22 | 22 |

Note: Random-effects probit regression of the individual panel dataset considering subjects in the role of an antitrust; Dependent variable indicates the chosen investigation probability; Treatment dummy is coded 1 for subjects deciding in the LEN treatment and 0 for the NO_LEN treatment; statistical significane is indicated as: * p<0.1, ** p<0.05 and *** p<0.01

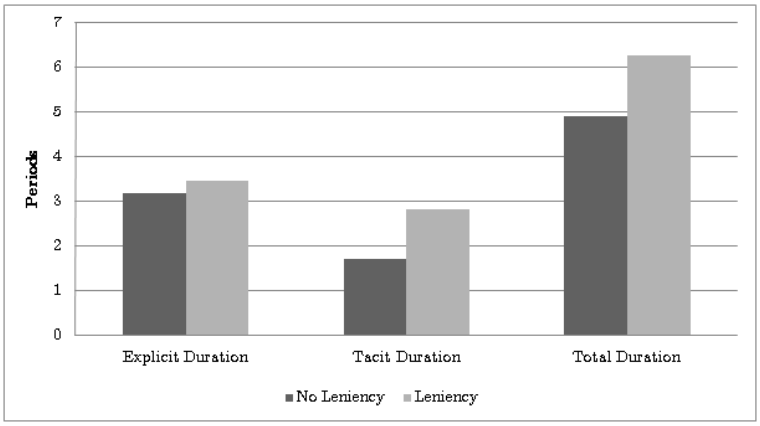
Specification (1) of this Table, demonstrates that the subject in the role of the antitrust authority substitutes the reporting device for its investigation tool, although our findings are not significant due to the low number of independent observations; so that it chooses to audit less once it is possible for subjects in the role of firms to blow the whistle on their cartel. The treatment dummy is negative but insignificant, pointing that leniency induces lower auditing probability. Since in our experimental setup it is more likely that a higher market price is originated from a collusive agreement, for that case the subject in the role of the antitrust authority exerts more effort on auditing the market. Therefore, as would be expected, the antitrust subject responds more severely to higher prices and increases its auditing probability.

Nevertheless, as Table 5.5.1 illustrates, although not significantly, the subject in the role of an antitrust discovers more cartels in the LEN treatment. This is in line with Miller's (2009) conclusion that *leniency programs* are associated with an enhancement of the rate of detection. It also tends to be consistent with Apesteguia et al. (2007) that find an increase in the detection rate.

**Cartel Duration**: All the results so far show that the duration of cartels is affected by several influential factors. Figure 5.5.6 illustrates that the duration of cartels increases in the LEN treatment. Total cartel duration is defined as the number of consecutive periods the subjects in the role of the firms are willing to chose the same price as a minimum price. Explicit duration indicates chosing the same minimum price with a prior communication, whereas tacit duration indicates no prior communication. We observe that, while explicit cartel duration is the same among both treatments, a higher duration of tacit cartels in the case of leniency being present.

Furthermore, other alternative explanatory approaches of cartel duration, e.g. the number of periods between the first successful price discussions and the first period in which the market

Figure 5.5.6: Cartel Duration




price is lower than the most recent price agreed upon, lead to similar results confirming tacit collusion to be increased in the LEN treatment. We also estimate the survival functions for the persistence of collusive pricing, using the Kaplan-Meier method, with all prices above 101 treated as collusive. The log-rank test clearly rejects equality across treatments (p-value== 0.0171). Thus the probability of continuing a cartel for any number of consecutive periods is much higher in the LEN treatment than in the NO_LEN treatment.

## 5.6 Conclusion

Through a laboratory experiment, this paper examines the effects of a *leniency programs* on cartel formation and deterrence and their stability in a Bertrand price setting game with homogenous goods and firms. Our paper follows the experimental designs of Apesteguia et al. (2007) as well as Hinloopen and Soetevent (2008). The fundamental changes in reviewing these effects were made through the implementation of an antitrust authority as an active player that decides upon the probability of investigation endogenously and offers only partial immunity from sanction to a whistle-blower. The introduction of an active player in the role of an antitrust agency allows us to study the dependencies of observed actions of subjects in the roles of firms and the selection of an auditing effort.

We illustrate that a the additional introduction of a *leniency program* has various effects, which make it difficult to draw a concrete conclusion upon its effectiveness, even in a controlled laboratory environment. When the antitrust authority introduces the *leniency program*, the antitrust policy has insignificantly more deterrence effect, in the sense that less subjects decide to communicate. Apparently the possibility of whistle-blowing, as a credible threat, serves to reduce the cartel rate and the persistence of some subjects that decide not to communicate at all blocks some cartels from forming, although we find this effect to be insignificant.

However, antitrust policies with a *leniency program* embedded appear to be ineffective in reducing prices and could stabilize those cartels that are not deterred. Interestingly, for cartels

that survive, leniency induces them to charge even higher prices. Although the subject in the role of the antitrust authority seems to substitute the reporting device for its investigation tool, there are more cartels discovered. Furthermore, the subjects responds more severely to a higher market prices and increase their auditing probability. In short, when the antitrust authority chooses its optimal prosecution policy, the introduction of a *leniency program* causes fewer cartels to form, though, cooperation in these cartels is more successful in charging prices above the static Nash equilibrium price and they can have a longer duration. Thus, our results are, in general, in line with the experimental papers which have *leniency programs* with full immunity.

We were aware of the lack of an well-founded game theoretical model, that leads to reliable predictions about the behaviors of the firms as well as the antitrust agency. This makes the presented series of experiments in our paper to be of an explorative character that is motivated by different theories. Due to the low number of independent observations, the findings presented in this work are in need of further investigations with an increased number of participants. Furthermore, since this paper has made crucial assumptions on price systems and homogeneity of firms and markets, one could think of possible extensions for future research. For instance, one could introduce a dynamic game with different production costs in each round. This is a more realistic setting and could basically mislead the antitrust authority and cause it to investigate the high cost firms producing a competitive product.

# 5.A Experiment instructions

Cover sheet of the experiment instructions

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

**Anleitung zum Experiment „Entscheidungen von Individuen in Märkten“**

Herzlich Willkommen zum Experiment und vielen Dank für Ihr Erscheinen. Sie können in diesem Experiment Geld verdienen. Die Höhe Ihres Gewinnes hängt dabei direkt von Ihren Entscheidungen und den Entscheidungen der anderen Teilnehmer/innen ab.

Bitte lesen Sie sich die Anweisungen in der Reihenfolge, wie sie vom Experimentator erklärt werden, durch und beantworten Sie die Kontrollfragen am Ende einer jeden Stufe. Es ist dabei von größter Wichtigkeit, dass Sie während des Experimentes nicht sprechen oder auf andere Weise kommunizieren als es im Experiment zugelassen ist. Bitte verstauen Sie des Weiteren ihre Taschen unter dem Sitz und schalten Sie ihre Mobiltelefone ab. Sollten Sie Fragen haben, heben Sie bitte die Hand und warten Sie, bis der Experimentator auf sie zukommt.

Das Experiment besteht aus 4 Teilen. Der erste Teil dient dazu Sie mit dem Spiel vertraut zu machen. Der zweite Teil besteht aus 20 einzelnen Runden, aus denen am Ende eine Runde als auszahlungswirksam ausgewählt wird. Die Auswahl erfolgt durch einen Teilnehmer im Raum mittels einer Urne. Der dritte Teil des Experimentes besteht aus einer Runde in der Sie 10 Entscheidungen treffen müssen. Die auszahlungsrelevante Entscheidung wird abermals durch eine Urne bestimmt. Der vierte Teil besteht aus einer Entscheidung, die in Abhängigkeit der Entscheidung der Anderen zu einer Auszahlung führt.

Spieler F: Für die Teilnahme am Experiment erhalten Sie einen Betrag von 3 ECU. Im zweiten Teil erhalten Sie außerdem in jeder Runde eine Anfangsausstattung von 3 ECU. Am Ende einer jeden Runde erhalten Sie Informationen darüber welchen Betrag Sie erspielt haben.

Spieler A: Für die Teilnahme am Experiment erhalten Sie einen Betrag von 3 ECU. Im zweiten Teil erhalten Sie außerdem in jeder Runde eine Anfangsausstattung von 6 ECU. Am Ende einer jeden Runde erhalten Sie Informationen darüber welchen Betrag Sie erspielt haben. Sollte die ausgewählte Runde mit einer negativen Auszahlung abgeschlossen werden, erhalten Sie eine Auszahlung von 0 ECU.

Die im Experiment erhaltenen Auszahlungen werden im Verhältnis 1 ECU = 1€ umgewandelt.

# Part 1 - Game Description

**Zugrundeliegendes Spiel für die Teile 1 und 2**

Sie werden nun eine Reihe von Entscheidungen treffen, bei der Sie in einer Gruppe, bestehend aus ihnen und 3 weiteren Mitspielern, spielen. Die Gruppenzusammensetzung wird anfangs per Zufallsgenerator in Spieler F und Spieler A aufgeteilt und ist das gesamte Experiment über konstant.

Als Spieler F treffen Sie Entscheidungen über den Preis eines Gutes. Sie erhalten zu Beginn einer jeden Runde eine Anfangsausstattung in Höhe von 3 ECU. Die Kosten für die Produktion des Gutes betragen 100 ECU. Sie haben in jeder Runde die Möglichkeit ihren Preis festzusetzen. Ihr Preis darf sich dabei in einem Bereich von 101 ECU bis 110 ECU bewegen. Haben Sie einen Preis gesetzt, lautet die Auszahlungsregel folgendermaßen:

> Von dem geringsten gesetzten Preis $p \in [101{,}110]$ ECU werden die Kosten in dieser $c = 100$ ECU abgezogen. Anschließend wird dieses Ergebnis durch die Anzahl der Spieler geteilt, die diesen geringsten Preis gewählt haben. Jeder der einen Preis höher als den geringsten Preis wählt erhält eine Auszahlung von 0.

Als Spieler A treffen Sie Ihre Entscheidungen in Teil 2.

**Teil 1:**

Spieler F: In diesem Teil spielen Sie mit 2 weiteren Spielern das oben beschriebene Spiel. Sie haben jeweils 30 Sekunden für Ihre Entscheidung. Bitte tragen Sie hierzu ihren Preis in das Feld und klicken sie auf Weiter. Im Anschluss werden Ihnen der Marktpreis und ihre Auszahlung in dieser Periode angezeigt.

Spieler A: Sie haben in dieser Phase keine Aufgabe. Bitte warten Sie auf weitere Anweisungen.

Nach Beantwortung der nun folgenden Kotrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Sind alle Kontrollfragen richtig beantwortet beginnt der Teil 1.

Kontrollfragen:

1. Die anderen Mitglieder Ihrer Gruppe wählen einen Preis i.H.v. 108 ECU. Sie wählen einen Preis von 104. Wie hoch ist Ihre Auszahlung? _____

2. Sie wählen einen Preis i.H.v. 109 ECU. Ihre Gruppenmitglieder wählen einen Preis von 108 ECU. Wie hoch ist Ihre Auszahlung? _____

3. Sie wählen einen Preis i.H.v. 107 ECU. Ihre Gruppenmitglieder wählen einen Preis von 102 ECU. Wie hoch ist die Auszahlung der anderen Gruppenmitglieder? _____

**Teil 2:**

**Spieler F:** Basis dieses Teils bildet abermals das oben beschriebene Spiel. Wie beschrieben, erhalten Sie in Jeder Runde eine Anfangsausstattung in Höhe von 3 ECU. Sie haben nun die Möglichkeit vor Ihrer Preissetzung zu entscheiden ob Sie kommunizieren oder nicht kommunizieren.

Wenn Sie sich entscheiden zu kommunizieren, besteht eine von Spieler A bestimmte Chance, dass Ihre Kommunikation aufgedeckt wird. Sollte dieser Fall eintreten, wird der gesamten Gruppe eine Strafe auferlegt. Die Höhe der Strafe bestimmt sich durch 1,5 mal der Differenz aus dem niedrigsten Preis und den Kosten. Diese Strafe wird auf die Spieler aufgeteilt, welche sich entschieden haben zu kommunizieren.

[ONLY ADDED IN THE LENIENCY TREATMENT] Sie bekommen auch die Möglichkeit Ihre Kommunikation selbst aufzudecken. Im Falle, dass Sie diese als Erster zugeben, wird die Kommunikation vollständig aufgedeckt und Sie erleiden nur die Hälfte der drohenden Strafe, während die übrigen Gruppenmitglieder die volle Strafe erleiden.

Am Ende einer jeden Runde erhalten Sie Informationen über den Marktpreis, Ihren erwirtschaften Gewinn, Ihre Strafe und Ihre kumulierten Gewinne.

**Spieler A:** Ihre Anfangsausstattung beträgt 6 ECU. Sie haben nun die Möglichkeit, nachdem Sie den durch die Spieler F gesetzten Marktpreis beobachtet haben, eine Entdeckungswahrscheinlichkeit anzugeben. Bitte wählen Sie ihre Wahrscheinlichkeit in Anhängigkeit der Ihnen zugrundeliegenden Kostenfunktion aus. Diese Kostenfunktion lautet:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Entdeckungswahrscheinlichkeit | 15% | 20% | 25% | 30% | 35% | 40% | 45% | 50% | 55% | 60% |
| Kosten der Entdeckungs-wahrscheinlichkeit (in ECU) | 0,0 | 0,3 | 0,7 | 1,2 | 1,8 | 2,4 | 3,2 | 4,0 | 5,0 | 6,0 |

Sollten Sie eine Kommunikation aufdecken, beträgt Ihr Gewinn die Summe aller Strafen. Im Falle, dass keine Kommunikation aufgedeckt wird, tragen Sie die Kosten der gewählten Entdeckungs-wahrscheinlichkeit.

[ONLY ADDED IN THE LENIENCY TREATMENT] Des Weiteren können Sie in dieser Phase Informationen durch die Teilnehmer erhalten, ob kommuniziert wurde oder nicht. Trifft ein solcher Bericht ein, ist die Entdeckungswahrscheinlichkeit automatisch 1, ohne dass ihnen weitere Kosten entstehen. Sie erhalten dann die volle Strafe abzüglich der halben Strafe desjenigen Spielers, der zuerst berichtet hat.

Am Ende einer jeden Runde erhalten Sie Informationen über den Marktpreis, Ihren erwirtschaften Gewinn, Ihre Strafe und Ihre kumulierten Gewinne.

Nach Beantwortung der nun folgenden Kotrollfragen heben Sie bitte die Hand, damit ein Experimentator diese überprüfen kann. Sind alle Kontrollfragen richtig beantwortet, beginnt der Teil 2.

1. Alle haben sich dazu entschieden zu kommunizieren. Alle bieten einen Preis von 106 ECU. Wie hoch ist Ihre Auszahlung? _____

2. Ihre Kommunikation ist nun aufgedeckt worden. Wie hoch ist Ihre Strafe, wenn man den Preis aus Frage 1. als Grundlage nimmt? _____

3. Alle haben sich dazu entschieden zu kommunizieren. Alle bieten einen Preis von 104 ECU. Sie entscheiden sich zu berichten. Wie hoch ist Ihre Strafe? _____

4. Alle haben sich dazu entschieden zu kommunizieren. Sie bieten einen Preis von 104 ECU; alle anderen einen Preis von 105 ECU. Sie entscheiden sich zu berichten. Wie hoch ist Ihre Strafe? _____

5. Alle haben sich dazu entschieden zu kommunizieren. Alle bieten einen Preis von 106 ECU. Spieler A hat sich entschieden eine Entdeckungswahrscheinlichkeit von 50% zu wählen. Wie hoch ist seine Auszahlung wenn:
    a. Spieler A die Kommunikation aufdeckt? _____
    b. Spieler A die Kommunikation nicht aufdeckt? _____

**Teil 3:**

In diesem Teil des Experimentes werden Sie gebeten Lotterieentscheidungen zu treffen. Sie haben die Möglichkeit zwischen der Lotterie X und der Lotterie Y zu wählen. Ihnen werden insgesamt zehn Entscheidungen vorgelegt, bei denen Sie sich bitte für Lotterie X oder Lotterie Y entscheiden. Im Anschluss daran wird eine dieser Lotterien zufällig ausgewählt und ihre Auszahlung berechnet. Dieser Teil ist für das Experiment auszahlungsrelevant.

**Teil 4:**

In diesem Teil werden Sie mit einem weiteren zufällig bestimmten Mitspieler eine Entscheidung zwischen zwei Optionen treffen. Bitte lesen Sie die Anweisungen auf dem Bildschirm sorgfältig durch. Sie treffen sie zunächst ihre unabhängigen Entscheidungen und im Anschluss daran Ihre abhängigen Entscheidungen. Zum Ende der Stufe werden ihnen Ihre Auswahl, die Auswahl Ihres Mitspielers sowie Ihre Auszahlung aus diesem Teil angezeigt. Dieser Teil ist für das Experiment auszahlungsrelevant.

Bitte bleiben Sie nach Abschluss der letzten Stufe sitzen. Es wird nun einer der Teilnehmer ausgewählt, der aus einer Urne eine Nummernkarte zieht, welche die auszahlungsrelevante Runde aus dem zweiten Teil des Experimentes bestimmt. Im Anschluss daran erhalten Sie eine Übersicht über alle Ihre Auszahlungen.

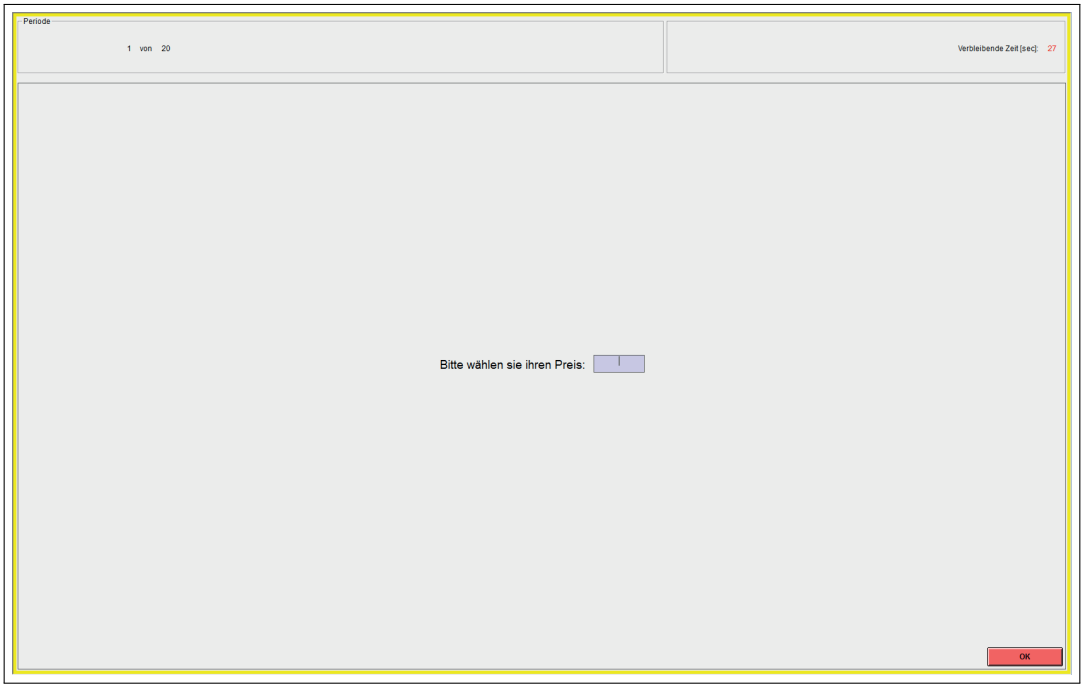
Den Abschluss des Experimentes bildet ein kurzer Fragebogen. Haben Sie diesen ausgefüllt, kommen Sie mit ihrer Platzkarte nach vorne und nehmen Ihre Experiment Auszahlung in Empfang.

**Vielen Dank, dass Sie an unserem Experiment teilgenommen haben ☺**

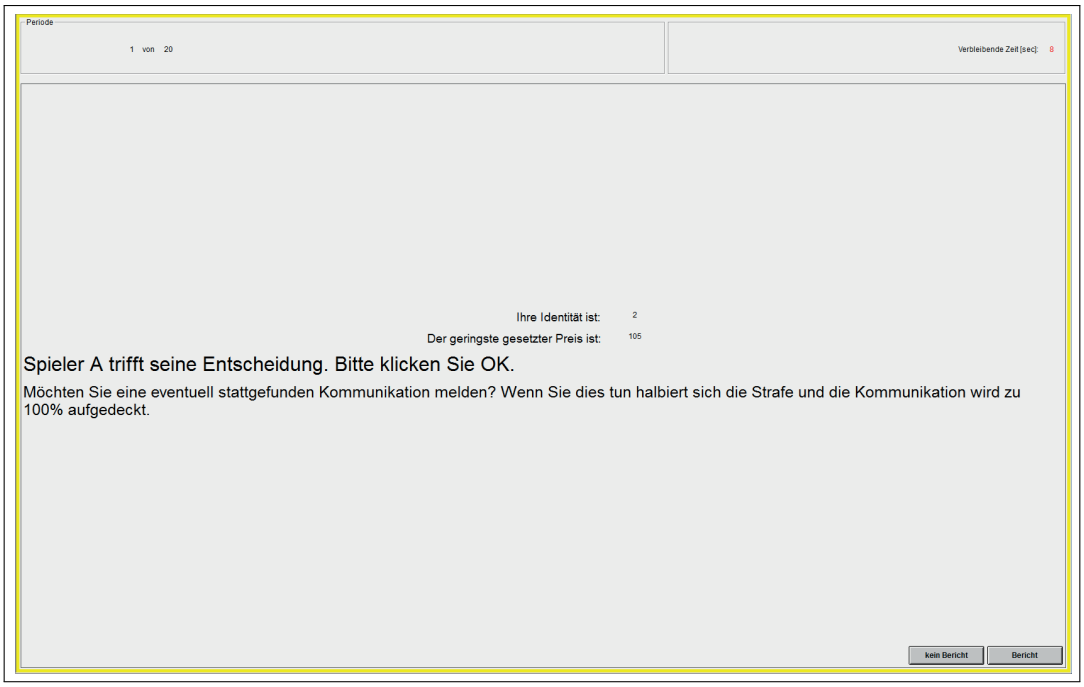
# 5.B Experiment screens

Communication between the subjects

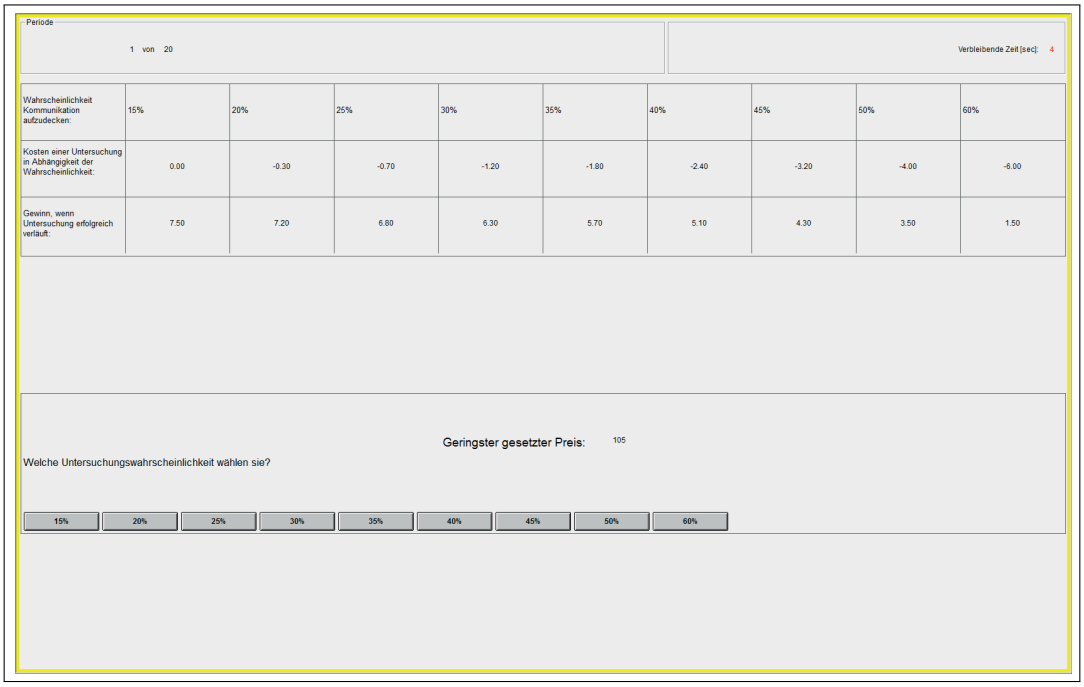

Price Decision



Possibility to file a report




Choice of detection probability



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# Appendix A

# Online questionnaire

Below we provide the experimental instructions and all control questions. Our web study was conducted in German. Note, we use three groups of participants (police applicants, high school students, university students with and without the information that they are playing with an police applicant); therefore questions vary on some passages of the questionnaire depending on the groups or for university students for which treatment.

.....

Introduction

[ALL PARTICIPANTS:] Herzlich willkommen zu dieser Untersuchung! Sie nehmen nun an einer wissenschaftlichen Untersuchung der Goethe-Universität Frankfurt teil. Dazu haben Sie sich mit einem individuellen Zugangsschlüssel angemeldet, welchen wir Ihnen zusammen mit der Einladung zu dieser Untersuchung zugeschickt haben. **Zugangsschlüssel wurde zufällig generiert und ist nicht personalisiert**. Er stellt sicher, dass nur die von uns eingeladenen Personen an der Untersuchung teilnehmen. Jeder Schlüssel kann nur einmal verwendet werden und wird nach der erstmaligen Benutzung ungültig.

[ONLY POLICE APPLICANTS:] In dieser Untersuchung geht es um Einstellungen und Entscheidungen von Bewerberinnen und Bewerbern für verschiedene Berufsgruppen.

[ONLY HIGH SCHOOL STUDENTS:] In dieser Untersuchung geht es um Einstellungen und Entscheidungen von Schülerinnen und Schülern.

[ONLY POLICEMEN IN TRAINING:] In dieser Untersuchung geht es um Einstellungen und Entscheidungen von Berufseinsteigerinnen und Berufseinsteigern in Hessen.

[ALL PARTICIPANTS:] **Alle Angaben, die Sie in dieser Untersuchung machen, werden streng vertraulich behandelt und nur für wissenschaftliche Zwecke verwendet. Für die Analyse werden alle Daten vollständig anonymisiert. Ein Rückschluss auf Ihre Person [ONLY POLICE APPLICANTS:] bzw. auf Ihre Bewerberdaten [ALL:] ist ausgeschlossen!**

[POLICE APPLICANTS, HIGH SCHOOL STUDENTS AND POLICEMEN IN TRAINING:] In dieser Untersuchung werden Sie gebeten, verschiedene Entscheidungen zu treffen. Genaue Informationen erhalten Sie auf den folgenden Seiten. Durch Ihre Entscheidungen können Sie und die anderen Teilnehmer jeweils **bis zu 400 Euro** verdienen. Lesen Sie die folgenden Erklärungen daher bitte sorgfältig durch.

Am Ende der Untersuchung werden wir **15 Teilnehmer(innen)** auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen erreicht haben. Auch hierzu erhalten Sie genaue Informationen auf den folgenden Seiten. Zusätzlich verlosen wir unter allen Teilnehmer(inne)n **3x iPod Nano**.

[ALL UNIVERSITY STUDENTS IN STAGE 1 AS PLAYER A:] In dieser Untersuchung werden Sie gebeten, verschiedene Entscheidungen zu treffen. Genaue Informationen erhalten Sie auf den folgenden Seiten. Durch Ihre Entscheidungen können Sie **bis zu 200 Euro** verdienen. Lesen Sie die folgenden Erklärungen daher bitte sorgfältig durch.
Am Ende der Untersuchung werden wir **8 Teilnehmer(innen)** auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen erreicht haben. Auch hierzu erhalten Sie genaue Informationen auf den folgenden Seiten.

[ALL UNIVERSITY STUDENTS IN STAGE 1 AS PLAYER B:] In dieser Untersuchung werden Sie gebeten, verschiedene Entscheidungen zu treffen. Genaue Informationen erhalten Sie auf den folgenden Seiten. Durch Ihre Entscheidungen können Sie **bis zu 400 Euro** verdienen. Lesen Sie die folgenden Erklärungen daher bitte sorgfältig durch.
Am Ende der Untersuchung werden wir **8 Teilnehmer(innen)** auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen erreicht haben. Auch hierzu erhalten Sie genaue Informationen auf den folgenden Seiten.

[ALL UNIVERSITY STUDENTS IN STAGE 2 AS PLAYER A:] In dieser Untersuchung werden Sie gebeten, verschiedene Entscheidungen zu treffen. Genaue Informationen erhalten Sie auf den folgenden Seiten. Durch Ihre Entscheidungen können Sie **bis zu 520 Euro** verdienen. Lesen Sie die folgenden Erklärungen daher bitte sorgfältig durch.
Am Ende der Untersuchung werden wir **15 Teilnehmer(innen)** auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen erreicht haben. Auch hierzu erhalten Sie genaue Informationen auf den folgenden Seiten.

[ALL UNIVERSITY STUDENTS IN STAGE 2 AS PLAYER B:] In dieser Untersuchung werden Sie gebeten, verschiedene Entscheidungen zu treffen. Genaue Informationen erhalten Sie auf den folgenden Seiten. Durch Ihre Entscheidungen können Sie **bis zu 720 Euro** verdienen. Lesen Sie die folgenden Erklärungen daher bitte sorgfältig durch.
Am Ende der Untersuchung werden wir **15 Teilnehmer(innen)** auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen erreicht haben. Auch hierzu erhalten Sie genaue Informationen auf den folgenden Seiten.

[ALL PARTICIPANTS:] Bitte beantworten Sie alle Fragen und Entscheidungen allein, d.h. ohne Absprache mit anderen Personen. Klicken Sie bitte auf "Weiter", um mit der Untersuchung zu beginnen.
Hinweis: Der Einfachheit halber verwenden wir im Folgenden ausschließlich die männliche Form (z.B. Teilnehmer) auch wenn sowohl männliche als auch weibliche Personen gemeint sind.

.....

**General Explanations for the Participants: Stage 1 - Trust Game**

[ALL PARTICIPANTS:] In dieser Entscheidungssituation gibt es zwei Personen, die wir A und B nennen. Beide Personen erhalten 100 Euro. A entscheidet zuerst, anschließend entscheidet B.

[ONLY UNIVERSITY STUDENTS MATCHED WITH POLICE APPLICANTS:] **Sie sind Person A. Bitte beachten Sie:** Wir führen diese Untersuchung ebenfalls mit **Bewerbern der Hessischen Polizeischule in Wiesbaden** durch. Ein **zufällig ausgewählter Polizeibewerber** aus dieser Untersuchung ist Person B.

[ONLY UNIVERSITY STUDENTS MATCHED WITH CONTROL GROUP:] **Sie sind Person A**. Ein anderer, zufällig ausgewählter Teilnehmer dieser Untersuchung ist **Person B**.

.....

**Decision of Player A**

[ALL PARTICIPANTS:] A muss über die Verwendung seiner 100 Euro entscheiden. A hat drei Möglichkeiten: Er kann den Betrag behalten, er kann 50 Euro an B geben oder er kann 100 Euro an B geben. Jeder Euro, den A an B weitergibt, wird von uns verdreifacht und an B überwiesen. Das bedeutet:

- Wenn A 50 Euro weitergibt, erhält B damit zusätzlich zu seinem Anfangsbetrag 150 Euro. A hat in diesem Fall selbst noch 50 Euro und B hat insgesamt 100 + 150 = 250 Euro.
- Wenn A 100 Euro weitergibt, erhält B zusätzlich zu seinem Anfangsbetrag 300 Euro. A hat in diesem Fall selbst 0 Euro und B hat insgesamt 100 + 300 = 400 Euro.
- Wenn A kein Geld weitergibt, dann ändert sich nichts. B hat 100 Euro und A hat auch 100 Euro.

. . . . . .

**Decision of Player B**

B muss entscheiden, was er tut, wenn er von A Geld bekommt. B hat jeweils zwei Möglichkeiten: Er kann entweder das gesamte Geld für sich behalten oder er kann so viel Geld an A zurückgeben, dass beide am Ende gleich viel besitzen. Das bedeutet:

- Wenn A dem B 50 Euro gibt, kann B entweder die 250 (100 + 150) Euro behalten oder 100 Euro an A zurückgeben (A und B haben dann beide jeweils 150 Euro).
- Wenn A dem B 100 Euro gibt, kann B entweder die 400 (100 + 300) Euro behalten oder 200 Euro an A zurückgeben (A und B haben dann beide jeweils 200 Euro).
- Wenn A dem B 0 Euro gibt, d.h. wenn A sein Geld behält, trifft B keine Entscheidung. Beide behalten dann ihre 100 Euro.

Die folgende Tabelle fasst die verschiedenen Entscheidungsmöglichkeiten sowie die daraus resultierenden Einkommen noch einmal zusammen.

Wir werden Sie gleich auffordern, eine Entscheidung als Person A und eine Entscheidung als Person B zu treffen.

[POLICE APPLICANTS AND HIGH SCHOOL STUDENTS:] **Bitte beachten Sie:** Am Ende der Studie losen wir aus allen Teilnehmern **fünf Teilnehmer-Paare** aus, die von uns Geld ausbezahlt bekommen. Wie viel Geld jemand bekommt, hängt davon ab, welche Entscheidungen er und der andere ihm zugeloste Teilnehmer in seinem Paar getroffen haben. Dabei bestimmt der Zufall, für welchen Teilnehmer die Entscheidung als Person A relevant ist und für wen die Entscheidung als Person B.

| Entscheidung von A | Entscheidung von B | Einkommen von A | Einkommen von B |
|---|---|---|---|
| A behält die 100 Euro | ———— | 100 Euro | 100 Euro |
| A gibt 50 Euro an B | B gibt 0 Euro zurück | 50 Euro | 250 Euro |
| | B gibt 100 Euro zurück | 150 Euro | 150 Euro |
| A gibt 100 Euro an B | B gibt 0 Euro zurück | 0 Euro | 400 Euro |
| | B gibt 200 Euro zurück | 200 Euro | 200 Euro |

[POLICEMEN IN TRAINING:] **Bitte beachten Sie:** Am Ende der Studie losen wir aus allen Teilnehmern **drei Teilnehmer-Paare** aus, die von uns Geld ausbezahlt bekommen. Wie viel Geld jemand bekommt, hängt davon ab, welche Entscheidungen er und der andere ihm zugeloste Teilnehmer in seinem Paar getroffen haben. Dabei bestimmt der Zufall, für welchen Teilnehmer die Entscheidung als Person A relevant ist und für wen die Entscheidung als Person B.

[ONLY UNIVERSITY STUDENTS MATCHED WITH POLICE APPLICANTS:] **Bitte beachten Sie:** Am Ende der Studie losen wir aus allen Teilnehmern **vier Teilnehmer-Paare** aus, die von uns Geld ausbezahlt bekommen. Wie viel Geld jemand bekommt, hängt davon ab, welche Entscheidungen er als A und der ihm zugeloste Polizeibewerber als B getroffen haben.

[ONLY UNIVERSITY STUDENTS MATCHED WITH CONTROL GROUP:] **Bitte beachten Sie:** Am Ende der Studie losen wir aus allen Teilnehmern **vier Teilnehmer-Paare** aus, die von uns Geld ausbezahlt bekommen. Wie viel Geld jemand bekommt, hängt davon ab, welche Entscheidungen er als A und die ihm zugeloste Person als B getroffen haben.

[ALL PARTICIPANTS:] Es ist also wichtig, dass Sie Ihre Entscheidungen gut überlegen, da diese bestimmen, wie viel Sie verdienen, wenn Sie am Ende der Studie ausgelost werden. Bevor Sie Ihre Entscheidung treffen, beantworten Sie bitte zuerst folgende zwei "Quizfragen". Diese Fragen sind nicht für die Auszahlung relevant, sondern dienen allein dazu, zu testen, ob alle Informationen richtig verstanden wurden. Wenn Sie die Quizfragen richtig beantwortet haben, werden die Entscheidungen freigeschaltet und Sie können Ihre Entscheidungen treffen.

**Quiz Question 1:**

Angenommen, Sie werden am Ende der Studie ausgelost und Ihre Entscheidung als Person A ist relevant. Sie haben sich als A entschieden, 50 Euro an Person [1] B zu geben. Der Ihnen zugeloste Teilnehmer [2] hat sich als B entschieden, in diesem Fall 100 Euro zurückzugeben.

- Wie viel Geld bekommen Sie als A ausbezahlt? ☐
- Wie viel Geld bekommt der andere Teilnehmer [3] als B ausbezahlt? ☐

**Quiz Question 2:**

[ALL UNIVERSITY STUDENTS:] Angenommen, Sie werden am Ende der Studie ausgelost und Sie haben sich als A entschieden, 100 Euro an Person [4] B zu geben. Person [5] B hat entschieden, Ihnen in diesem Fall kein Geld zurückzugeben.

- Wie viel Geld bekommen Sie als A ausbezahlt? ☐
- Wie viel Geld bekommt [6] B ausbezahlt? ☐

**Quiz Question 2:**

[ALL UNIVERSITY STUDENTS:] Angenommen, Sie werden am Ende der Studie ausgelost und Ihre Entscheidung als Person B ist relevant. Der Ihnen zugeloste Teilnehmer hat als Person A entschieden, 100 Euro weiterzugeben. Sie haben sich als Person B entschieden, in diesem Fall das gesamte Geld zu behalten.

- Wie viel Geld bekommen Sie als B ausbezahlt? ☐
- Wie viel Geld bekommt der andere Teilnehmer als A ausbezahlt? ☐

[ALL PARTICIPANTS:] Bitte treffen Sie nun Ihre Entscheidungen. Um sich die Konsequenzen Ihrer Entscheidungen noch einmal zu veranschaulichen, scrollen Sie einfach nach oben zur Tabelle.

. . . . . .

**Your decision in the role of Player A**

[1] [UNIVERSITY STUDENT WITH POLICE APPLICANT]: den Polizeibewerber
[2] [UNIVERSITY STUDENT WITH POLICE APPLICANT]: Polizeibewerber
[4] [UNIVERSITY STUDENT WITH POLICE APPLICANT]: den Polizeibewerber
[5] [UNIVERSITY STUDENT WITH POLICE APPLICANT]: Der Polizeibewerber

Bitte entscheiden Sie sich: Wollen Sie die 100 Euro behalten oder 50 Euro bzw. 100 Euro an B weitergeben?

- Ich behalte die 100 Euro ◯
- Ich gebe 50 Euro an B ◯
- Ich gebe 100 Euro an B ◯

[ALL UNIVERSITY STUDENTS:] **Im Folgenden sind wir an Ihrer Einschätzung bezüglich des Verhaltens von Person B interessiert. Was glauben Sie?**

1. Wie wird sich der Polizeibewerber verhalten für den Fall, dass Sie 50 Euro an ihn weitergeben (die von uns auf 150 Euro verdreifacht werden)?

   - B behält die 250 Euro (150 Euro plus seine eigenen 100 Euro) ◯
   - B gibt mir 100 Euro zurück ◯

2. Wie wird sich der Polizeibewerber verhalten für den Fall, dass Sie 100 Euro an ihn weitergeben (die von uns auf 300 Euro verdreifacht werden)?

   - B behält die 400 Euro (300 Euro plus seine eigenen 100 Euro) ◯
   - B gibt mir 200 Euro zurück ◯

Wenn Sie Ihre Antworten gegeben haben, klicken Sie bitte auf "WEITER".

. . . . . .

**Your decision in the role of Player B**

[POLICE APPLICANTS AND HIGH SCHOOL STUDENTS:]

1. Für den Fall, dass Person A 50 Euro weitergibt (die von uns auf 150 Euro verdreifacht werden), wie entscheiden Sie sich?

   - Ich behalte die 250 Euro (150 Euro plus meine eigenen 100 Euro) ◯
   - Ich gebe A 100 Euro zurück ◯

2. Für den Fall, das Person A 100 Euro weitergibt (die von uns auf 300 Euro verdreifacht werden), wie entscheiden Sie sich?

   - Ich behalte die 400 Euro (300 Euro plus meine eigenen 100 Euro) ◯
   - Ich gebe A 200 Euro zurück ◯

Wenn Sie Ihre Entscheidungen getroffen haben, klicken Sie bitte auf "WEITER". Beachten Sie bitte, dass Sie Ihre Entscheidungen anschließend nicht mehr rückgängig machen können.

. . . . . .

**General Explanations for the Participants:**
**Trust and Third Party Punishment\Reward Game (TPP\R Game)**

In dieser Entscheidungssituation geht es um die gleiche Situation wie vorher. Der einzige Unterschied besteht darin, dass Sie nun aufgefordert sind, eine Entscheidung als eine neue, dritte Person zu treffen, die die Entscheidungen von A und B beobachtet.

Person A und B erhalten beide wie zuvor jeweils 100 Euro. A entscheidet als erstes, wie viel er von seinem Betrag an B weitergibt. Jeder Euro wird dabei von uns verdreifacht. Anschließend entscheidet B, ob er das gesamte Geld behält oder ob er einen entsprechenden Betrag an A zurückgibt.

Die folgende Tabelle fasst die verschiedenen Entscheidungsmöglichkeiten sowie die daraus resultierenden Einkommen noch einmal zusammen.

Sie sind nun Person C, die folgende Entscheidung trifft, nachdem A und B ihre Entscheidungen getroffen haben.

| Entscheidung von A | Entscheidung von B | Einkommen von A | Einkommen von B |
|---|---|---|---|
| A behält die 100 Euro | ———— | 100 Euro | 100 Euro |
| A gibt 50 Euro an B | B gibt 0 Euro zurück | 50 Euro | 250 Euro |
| | B gibt 100 Euro zurück | 150 Euro | 150 Euro |
| A gibt 100 Euro an B | B gibt 0 Euro zurück | 0 Euro | 400 Euro |
| | B gibt 200 Euro zurück | 200 Euro | 200 Euro |

. . . . . .

**Decision of Player C:**

Sie erhalten 160 Euro. Sie haben nun die Möglichkeit, das Einkommen von A und B durch die Vergabe von so genannten Abzugs- oder Belohnungspunkten zu ändern. Jeder Punkt, den Sie dabei vergeben, kostet Sie selbst 1 Euro. Ein Belohnungspunkt, den Sie vergeben, erhöht das Einkommen der jeweiligen Person um 2 Euro. Ein Abzugspunkt, den Sie vergeben, reduziert das Einkommen der jeweiligen Person um 2 Euro.

Ob Sie Punkte vergeben, wie viele und welche (Abzug oder Belohnung), können Sie davon abhängig machen, welche Entscheidungen A und B treffen. Insgesamt können Sie nicht mehr als 160 Punkte vergeben. Sie können das Einkommen einer Person maximal auf Null reduzieren, d.h. niemand kann in dieser Situation Verluste machen. Abzugspunkte, die Sie darüber hinaus vergeben, reduzieren das Einkommen der entsprechenden Person also nicht weiter, sie verringern jedoch Ihr Einkommen.

textbrBitte beachten Sie: Die Entscheidungen von A und B in dieser Situation wurden bereits im Rahmen einer anderen Studie von anderen Teilnehmern getroffen. Die Teilnehmer waren dabei informiert, dass eine Person C später die Möglichkeit hat, ihnen Belohnungs- oder Abzugspunkte zu vergeben, welche ihr tatsächliches Einkommen beeinflussen. Sie treffen nun diese Entscheidung als C.

Am Ende der Studie losen wir aus allen Teilnehmern **fünf Teilnehmer C** aus, die von uns Geld ausbezahlt bekommen. Wie viel Geld jemand bekommt, hängt davon ab, welche Entscheidungen er getroffen hat und welche Entscheidungen zuvor A und B getroffen haben. Gleichzeitig bestimmen diese Entscheidungen auch die Abzugs- und Belohnungspunkte und damit den tatsächlichen Verdienst der Teilnehmer A und B.

Es ist also wichtig, dass Sie Ihre Entscheidungen gut überlegen, da diese bestimmen, wie viel Sie verdienen, wenn Sie am Ende der Studie ausgelost werden. Bevor Sie Ihre Entscheidung treffen, bitten wir Sie wieder, folgende zwei "Quizfragen" zu beantworten. Die Fragen sind nicht für die Auszahlung relevant, sondern dienen allein dazu, zu testen, ob alle Informationen richtig verstanden wurden.

**Wenn Sie die Quizfragen richtig beantwortet haben, werden die Entscheidungen freigeschaltet und Sie können Ihre Entscheidungen treffen.**

**Quiz Question 3:**

Angenommen, Sie werden am Ende der Studie ausgelost und Sie haben sich entschieden, in keinem der fünf möglichen Fälle Abzugs- oder Belohnungspunkte an A oder B zu vergeben.

- Wie viel Geld bekommen Sie als C ausbezahlt? ☐

**Quiz Question 4:**

Angenommen, Sie werden am Ende der Studie ausgelost und die Ihnen zugelosten A und B haben folgende Entscheidungen getroffen: A hat 50 Euro an B gegeben. B hat 0 Euro an A zurückgegeben. Sie haben sich für diesen Fall entscheiden, 20 Belohnungspunkte an A und 60 Abzugspunkte an B zu vergeben. Denken Sie daran, dass die Belohnungs- und Abzugspunkte verzweifacht auf das Einkommen von A und B wirken!

- Wie viel Geld bekommen Sie als C ausbezahlt? ☐
- Wie viel Geld bekommt A ausbezahlt? ☐
- Wie viel Geld bekommt B ausbezahlt? ☐

Bitte treffen Sie nun Ihre Entscheidung. Tragen Sie dazu bitte für jeden der fünf möglichen Fälle die Abzugs- oder Belohnungspunkte ein, die Sie in dem entsprechenden Fall an A oder an B vergeben wollen.

- Bitte tragen Sie eine **negative Zahl** ein, wenn Sie **Abzugspunkte** vergeben wollen.
- Bitte tragen Sie eine **positive Zahl** ein, wenn Sie **Belohnungspunkte** vergeben wollen.
- Wenn Sie **keine Punkte** vergeben wollen, tragen Sie bitte eine **0** ein.

Sobald Sie Zahlen eingegeben haben, werden Ihnen die resultierenden Einkommen für A und B und für Sie als C in den drei darunter liegenden Feldern angezeigt. Sie können durch das Eingeben verschiedener Zahlen feststellen, wie sich die Einkommen entsprechend verändern. Solange Sie noch nicht "WEITER" geklickt haben, können Sie Ihre Entscheidung beliebig verändern. Erst nachdem Sie "WEITER" geklickt haben, ist Ihre Entscheidung verbindlich und kann nicht mehr rückgängig gemacht werden.

**Fall 1: A behält die 100 Euro; B kann nichts zurückgeben**

Möchten Sie Abzugs- oder Belohnungspunkte an A vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Möchten Sie Abzugs- oder Belohnungspunkte an B vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Ihre Entscheidungen im Fall 1 haben folgende Auswirkungen:

Auszahlung A: ☐ Auszahlung B: ☐ Ihre Auszahlung: ☐

**Fall 2: A gibt 50 Euro an B; B gibt 0 Euro zurück**

Möchten Sie Abzugs- oder Belohnungspunkte an A vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Möchten Sie Abzugs- oder Belohnungspunkte an B vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Ihre Entscheidungen im Fall 1 haben folgende Auswirkungen:

Auszahlung A: ☐ Auszahlung B: ☐ Ihre Auszahlung: ☐

**Fall 3: A gibt 50 Euro an B; B gibt 100 Euro zurück**

Möchten Sie Abzugs- oder Belohnungspunkte an A vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Möchten Sie Abzugs- oder Belohnungspunkte an B vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Ihre Entscheidungen im Fall 1 haben folgende Auswirkungen:

Auszahlung A: ☐ Auszahlung B: ☐ Ihre Auszahlung: ☐

**Fall 4: A gibt 100 Euro an B; B gibt 0 Euro zurück**

Möchten Sie Abzugs- oder Belohnungspunkte an A vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Möchten Sie Abzugs- oder Belohnungspunkte an B vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Ihre Entscheidungen im Fall 1 haben folgende Auswirkungen:

Auszahlung A: ☐ Auszahlung B: ☐ Ihre Auszahlung: ☐

**Fall 5: A gibt 100 Euro an B; B gibt 200 Euro zurück**

Möchten Sie Abzugs- oder Belohnungspunkte an A vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Möchten Sie Abzugs- oder Belohnungspunkte an B vergeben und wenn ja, wie viele?

☐ **negative Zahl = Abzugspunkte positive Zahl = Belohnungspunkte**

Ihre Entscheidungen im Fall 1 haben folgende Auswirkungen:

Auszahlung A: ☐ Auszahlung B: ☐ Ihre Auszahlung: ☐

Wenn Sie Ihre Entscheidungen getroffen haben, klicken Sie bitte auf "WEITER". Beachten Sie bitte, dass Ihre Entscheidungen anschließend nicht mehr rückgängig gemacht werden können.

. . . . . .

**Control Questions**

Es folgen nun einige Fragen zu verschiedenen Themen. Es ist von großer Wichtigkeit, dass Sie diese so gewissenhaft wie möglich beantworten. Um eine Frage zu beantworten, klicken Sie auf das entsprechende Kästchen bzw. füllen Sie das jeweilige Textfeld aus. Manche Fragen ergeben sich aus anderen Fragen und werden nur bei Bedarf angezeigt. Sobald Sie alle Fragen beantwortet haben, klicken Sie auf "Weiter".

**[POLICE APPLICANTS AND POLICEMEN IN TRAINING:]**

**Kommen für Sie anstelle des Polizeiberufes noch andere Berufe (alternativ Studiengänge) in Frage?**

- Ja ◯
- Nein ◯

**Welche anderen Berufe (alternativ Studiengänge) kommen für Sie anstelle des Polizeiberufes in Frage?**

1. ☐
2. ☐
3. ☐

**Wie hoch müsste Ihr Netto-Einstiegsgehalt (d.h. nach Studienabschluss / 3 Jahre) mindestens sein, damit Sie eine Stelle bei der Polizei annehmen würden? (Also das, was Sie monatlich auf Ihr Konto überwiesen bekommen)**

☐ EURO im Monat

**Wie hoch müsste Ihr Netto-Einstiegsgehalt (d.h. nach Studium / Ausbildung) mindestens sein, damit Sie eine berufliche Tätigkeit anstelle der Polizei annehmen würden? (Also das, was Sie monatlich auf Ihr Konto überwiesen bekommen)**

☐ EURO im Monat

**Welche Möglichkeiten um auf den Polizeiberuf, bzw. das Studienangebot, aufmerksam zu werden, kennen Sie:**

- Internetauftritt ○
- Werbe-Printmedien (Broschüre, Flyer, Plakate) ○
- Werbeanzeigen, Online- oder Printmedien ○
- Fernsehdokumentationen ○
- Einstellungsberater (als Kontakt im Polizeipräsidium, Vorträge in Schulen, Kontakt mit Sportvereinen) ○
- Öffentliche Veranstaltungen (z.B. Hessentag/Rheinland-Pfalz Tag, Berufsmessen) ○
- Allgemeiner Kontakt mit der Polizei ○
- Kinowerbung (Trailer) ○
- Plakataktionen in Großstädten ○
- Werbehinweis auf Polizeifahrzeugen ○
- Bannerwerbung bei Sportvereinen ○
- keine ○

**Wie wichtig waren diese bei Ihrer Entscheidung, sich bei der Polizei zu bewerben?**

| | Überhaupt nicht wichtig 1 | 2 | 3 | 4 | Sehr wichtig 5 |
|---|---|---|---|---|---|
| • Internetauftritt | ○ | ○ | ○ | ○ | ○ |
| • Werbe-Printmedien (Broschüre, Flyer, Plakate) | ○ | ○ | ○ | ○ | ○ |
| • Werbeanzeigen, Online- oder Printmedien (Broschüre, Flyer, Plakate) | ○ | ○ | ○ | ○ | ○ |
| • Fernsehdokumentationen | ○ | ○ | ○ | ○ | ○ |
| • Einstellungsberater (als Kontakt im Polizeipräsidium, Vorträge in Schulen, Kontakt mit Sportvereinen) | ○ | ○ | ○ | ○ | ○ |
| • Öffentliche Veranstaltungen (z.B. Hessentag/Rheinland-Pfalz Tag, Berufsmessen) | ○ | ○ | ○ | ○ | ○ |
| • Allgemeiner Kontakt mit der Polizei | ○ | ○ | ○ | ○ | ○ |
| • Kinowerbung (Trailer) | ○ | ○ | ○ | ○ | ○ |
| • Plakataktionen in Großstädten | ○ | ○ | ○ | ○ | ○ |
| • Werbehinweis auf Polizeifahrzeugen | ○ | ○ | ○ | ○ | ○ |
| • Bannerwerbung bei Sportvereinen | ○ | ○ | ○ | ○ | ○ |

**Wie wichtig waren folgende Aspekte für Ihre Entscheidung, sich bei der Polizei zu bewerben?**

| | Überhaupt nicht wichtig 1 | 2 | 3 | 4 | Sehr wichtig 5 |
|---|---|---|---|---|---|
| • Heimatnähe | ○ | ○ | ○ | ○ | ○ |
| • Sicherer Arbeitsplatz | ○ | ○ | ○ | ○ | ○ |
| • Abwechslungsreiche Tätigkeit | ○ | ○ | ○ | ○ | ○ |
| • Teamwork | ○ | ○ | ○ | ○ | ○ |
| • Sport | ○ | ○ | ○ | ○ | ○ |
| • Gute Verdienstmöglichkeit | ○ | ○ | ○ | ○ | ○ |
| • Sicherheit und Ordnung zu gewährleisten | ○ | ○ | ○ | ○ | ○ |
| • Autorität | ○ | ○ | ○ | ○ | ○ |
| • Prestige und Anerkennung | ○ | ○ | ○ | ○ | ○ |

[ONLY RLP POLICE APPLICANTS]**Wie wichtig ist für Sie das bezahlte Studium, um den Beruf des Polizeibeamten zu ergreifen?**

| Überhaupt nicht wichtig | | | | Sehr wichtig |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| ○ | ○ | ○ | ○ | ○ |

**Bitte kreuzen Sie an, wo Sie sich bisher für den Polizeidienst beworben haben** (mehrere Antworten möglich):

| | | | | | |
|---|---|---|---|---|---|
| Bremen | ○ | Baden-Württemberg | ○ | Sachsen | ○ |
| Bundespolizei | ○ | Bayern | ○ | Mecklenburg-Vorpommern | ○ |
| Sachsen-Anhalt | ○ | BKA | ○ | Berlin | ○ |
| Niedersachsen | ○ | Schleswig-Holstein | ○ | Ausland | ○ |
| Hamburg | ○ | Nordrhein-Westfalen | ○ | Thüringen | ○ |
| Saarland | ○ | Rheinland-Pfalz | ○ | | |

**[ONLY HIGH SCHOOL STUDENTS:]**

**Folgende Berufsfelder gehören für Schülerinnen und Schülern zu den Beliebtesten. In welchem können Sie sich vorstellen, eine Ausbildung bzw. ein Studium zu beginnen?**

- Technischer Bereich ○
- Kaufmännischer Bereich ○
- Informatik, Software ○
- Polizei, Sicherheitsbehörde ○
- Bildung / Erziehung ○
- Medizin ○
- Medien ○
- Sonstiges ○

**Für welchen Beruf beabsichtigen Sie sich zu bewerben oder haben Sie sich bereits beworben?**

Bitte beachten Sie, dass Sie unter 1) Ihren Lieblingsberuf angeben.

1. ☐
2. ☐
3. ☐

**Wie hoch müsste Ihr Netto-Einstiegsgehalt (d.h. nach Studium / Ausbildung) mindestens sein, damit Sie Ihren Lieblingsberuf annehmen würden? (Also das, was Sie monatlich auf Ihr Konto überwiesen bekommen)**

☐ EURO im Monat

**Wie hoch müsste Ihr Netto-Einstiegsgehalt (d.h. nach Studium / Ausbildung) mindestens sein, damit Sie eine berufliche Tätigkeit anstelle Ihres Lieblingsberufes annehmen würden? (Also das, was Sie monatlich auf Ihr Konto überwiesen bekommen)**

☐ EURO im Monat

**Welche Möglichkeiten um auf den Polizeiberuf, bzw. das Studienangebot, aufmerksam zu werden, kennen Sie:**

- Internetauftritt ○
- Werbe-Printmedien (Broschüre, Flyer, Plakate) ○
- Werbeanzeigen, Online- oder Printmedien (Broschüre, Flyer, Plakate) ○
- Fernsehdokumentationen ○
- Einstellungsberater ○
- Öffentliche Veranstaltungen (z.B. Berufsmessen) ○
- Allgemeiner Kontakt mit dem Bereich ○
- Kinowerbung (Trailer) ○
- Plakataktionen in Großstädten ○
- Werbehinweis auf Fahrzeugen ○
- Bannerwerbung bei Sportvereinen ○
- keine ○

**Wie wichtig sind diese bei Ihrer Entscheidung sich für Ihren Lieblingsberuf zu bewerben?**

| | Überhaupt nicht wichtig 1 | 2 | 3 | 4 | Sehr wichtig 5 |
|---|---|---|---|---|---|
| • Internetauftritt | ○ | ○ | ○ | ○ | ○ |
| • Werbe-Printmedien (Broschüre, Flyer, Plakate) | ○ | ○ | ○ | ○ | ○ |
| • Werbeanzeigen, Online- oder Printmedien (Broschüre, Flyer, Plakate) | ○ | ○ | ○ | ○ | ○ |
| • Fernsehdokumentationen | ○ | ○ | ○ | ○ | ○ |
| • Einstellungsberater | ○ | ○ | ○ | ○ | ○ |
| • Öffentliche Veranstaltungen (z.B. Berufsmessen) | ○ | ○ | ○ | ○ | ○ |
| • Allgemeiner Kontakt mit dem Bereich | ○ | ○ | ○ | ○ | ○ |
| • Kinowerbung (Trailer) | ○ | ○ | ○ | ○ | ○ |
| • Plakataktionen in Großstädten | ○ | ○ | ○ | ○ | ○ |
| • Werbehinweis auf Fahrzeugen | ○ | ○ | ○ | ○ | ○ |
| • Bannerwerbung bei Sportvereinen | ○ | ○ | ○ | ○ | ○ |

**[POLICE APPLICANTS, HIGH SCHOOL STUDENTS AND POLICEMEN IN TRAINING:]**

**Wie ist Ihre Meinung zu den folgenden drei Aussagen?**

| | Lehne voll ab | Lehne eher ab | Stimme eher zu | Stimme voll zu |
|---|---|---|---|---|
| • Im Allgemeinen kann man den Menschen vertrauen | ○ | ○ | ○ | ○ |
| • Heutzutage kann man sich auf niemanden mehr verlassen | ○ | ○ | ○ | ○ |
| • Wenn man mit Fremden zu tun hat, ist es besser, vorsichtig zu sein, bevor man ihnen vertraut | ○ | ○ | ○ | ○ |

**Glauben Sie, dass die meisten Leute...**

• Sie ausnützen würden, falls sie eine Möglichkeit dazu hätten ..... ○

• oder versuchen würden, Ihnen gegenüber fair zu sein? ..... ○

**Würden Sie sagen, dass die Leute die meiste Zeit...**

- versuchen, hilfsbereit zu sein ..... ◯
- oder nur ihre eigenen Interessen verfolgen? ..... ◯

**Nun einige Fragen zu Ihrer Freizeit. Wie oft unternehmen Sie eine der folgenden Aktivitäten:**

| | Täglich | Mindestens 1mal pro Woche | Mindestens 1mal pro Woche | Seltener | Nie |
|---|---|---|---|---|---|
| • Ausgehen, essen oder trinken gehen (z.B. Club, Café, Kneipe, Restaurant) | ◯ | ◯ | ◯ | ◯ | ◯ |
| • Gegenseitige Besuche von Familienangehörigen oder Verwandten | ◯ | ◯ | ◯ | ◯ | ◯ |
| • Besuch von Veranstaltungen (z.B. Kultur, Musik, Religion, Sport) | ◯ | ◯ | ◯ | ◯ | ◯ |
| • Private Nutzung von Medien (z.B. Fernseher / Radio, PC, Internet) | ◯ | ◯ | ◯ | ◯ | ◯ |
| • Tätigkeiten im Haushalt (z.B. Reparaturen, Autopflege) | ◯ | ◯ | ◯ | ◯ | ◯ |
| • Aktive sportliche Betätigung | ◯ | ◯ | ◯ | ◯ | ◯ |

**In welcher Art von Verein sind Sie ehrenamtlich tätig?**

- Sportverein (z.B. Ballsport, Leichtathletik, Kampfsport) ◯
- Musikverein (z.B. Orchester, Chor, Gesang) ◯
- Gesellschaftsverein (z.B. Parteien, Pfadfinder, Bildungsverein) ◯
- Tier- und Naturschutzverein (z.B. WWF, Greenpeace, Vogelkunde) ◯
- Medien- und Kulturverein (z.B. Funk, Theater, Museum) ◯
- Freizeitverein (z.B. Fanclub, Karneval, Sammelverein) ◯
- Soziale- und Rettungsverein (z.B. DRK, Caritas, Feuerwehr) ◯
- Wirtschaftsverein (z.B. Gewerbeverein) ◯

**Wenn Sie einschätzen müssten, wie Sie sich aktiv sportlich betätigen, welche der Angaben ist für Sie zutreffend?**

- Ich betreibe eher Mannschaftssport ○
- Ich betreibe eher Individualsport ○

[ALL PARTICIPANTS:] **Wie schätzen Sie sich persönlich ein: Sind Sie im Allgemeinen ein risikobereiter Mensch oder versuchen Sie, Risiken zu vermeiden?**

| Gar nicht risikobereit | | | | | | | | | Sehr risikobereit |
|---|---|---|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**Man kann sich in verschiedenen Bereichen ja auch unterschiedlich verhalten. Wie würden Sie Ihre Risikobereitschaft in Bezug auf die folgenden Bereiche einschätzen:**

| | Gar nicht risikobereit | | | | | | | | | Sehr risikobereit |
|---|---|---|---|---|---|---|---|---|---|---|
| Wie ist das: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| • beim Autofahren? | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • bei Geldanlagen? | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • bei Freizeit und Sport? | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • bei Ihrer beruflichen Karriere? | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • bei Ihrer Gesundheit? | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • beim Vertrauen in fremde Menschen? | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

[POLICE APPLICANTS, HIGH SCHOOL STUDENTS AND POLICEMEN IN TRAINING:] **Im Folgenden finden Sie Aussagen, die Einstellungen und Verhaltensweisen betreffen. Bitte geben Sie jeweils an, wie häufig diese Aussagen im letzten halben Jahr auf Sie zutrafen.**

| | Fast nie | Selten | Manchmal | Häufig | Fast immer |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| • Ich mag Situationen, in denen vor Aufregung mein Herz klopft | ○ | ○ | ○ | ○ | ○ |
| • Ich mag es, wenn ich die Grenzen meines Körpers austeste | ○ | ○ | ○ | ○ | ○ |
| • Ich kenne das Gefühl, dass ich irgendwie aufgeputscht oder stimuliert werden möchte | ○ | ○ | ○ | ○ | ○ |
| • Ich habe es gerne, wenn ich "voll unter Strom" stehe | ○ | ○ | ○ | ○ | ○ |
| • Ich spüre gerne die Spannung in meinem Körper | ○ | ○ | ○ | ○ | ○ |
| • Ich bevorzuge starke und eindringliche Erlebnisse | ○ | ○ | ○ | ○ | ○ |
| • Ich brauche manchmal den "Kick", um mich wohl zu fühlen | ○ | ○ | ○ | ○ | ○ |
| • Ich mag es, mich in Ruhe auszuspannen | ○ | ○ | ○ | ○ | ○ |
| • Ich kann es genießen, wenn eine Weile einfach nichts passiert | ○ | ○ | ○ | ○ | ○ |
| • Sich völlig von der Umwelt abzuschotten, kann ein angenehmes Gefühl sein | ○ | ○ | ○ | ○ | ○ |
| • Ich mag es einfach dazusitzen und die Ruhe zu genießen | ○ | ○ | ○ | ○ | ○ |
| • Ich kenne das Gefühl, dass ich zu viele Eindrücke von außen bekomme und mich zurückziehen möchte | ○ | ○ | ○ | ○ | ○ |
| • Ich mag es, meinen Körper vor Aufregung zu spüren | ○ | ○ | ○ | ○ | ○ |
| • Ich mag es, mich aufgedreht oder aufgekratzt zu fühlen | ○ | ○ | ○ | ○ | ○ |
| • Es gibt Situationen, in denen kann ich gar nicht genug Eindrücke von außen bekommen | ○ | ○ | ○ | ○ | ○ |
| • Ich mag es, starken Eindrücken ausgesetzt zu sein | ○ | ○ | ○ | ○ | ○ |
| • Ich mag es, einmal gar nichts zu tun und gar nichts zu erleben | ○ | ○ | ○ | ○ | ○ |

[ALL PARTICIPANTS:] **Im Folgenden finden Sie eine Reihe von Aussagen darüber, wie man an die Arbeit herangehen kann. Denken Sie daran, dass keine Ihrer Angaben mit Ihnen persönlich in Verbindung gebracht werden kann und antworten Sie spontan und ehrlich. Es gibt keine richtigen oder falschen Antworten.**
Bitte geben Sie an, wie sehr die jeweilige Aussage **im Allgemeinen** auf Sie persönlich zutrifft.

| | Trifft gar nicht zu | | | | | | Trifft voll zu |
|---|---|---|---|---|---|---|---|
| Wie ist das: | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| • Ich gehe Probleme aktiv an. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • Wenn etwas schief geht, suche ich sofort nach Abhilfe. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • Wenn sich Möglichkeiten anbieten, etwas zu gestalten, dann nutze ich sie aus. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • Ich ergreife sofort die Initiative, wenn andere dies nicht tun. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • Ich nehme Gelegenheiten schnell wahr, um meine Ziele zu erreichen. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • Ich tue meist mehr als von mir gefordert wird. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| • Ich bin besonders gut darin, Ideen umzusetzen. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

[POLICE APPLICANTS, HIGH SCHOOL STUDENTS AND POLICEMEN IN TRAINING:] **Im Folgenden finden Sie eine Reihe von Aussagen zum Thema Strafverfolgung. Denken Sie daran, dass keine Ihrer Angaben mit Ihnen persönlich in Verbindung gebracht werden kann und antworten Sie spontan und ehrlich. Es gibt keine richtigen oder falschen Antworten. Bitte geben Sie an, wie sehr die jeweilige Aussage im Allgemeinen Ihrer Meinung entspricht.**

| | Trifft gar nicht zu | | | | Trifft voll zu |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| • Wenn eine Person vor der Polizei flüchtet, hat sie wahrscheinlich eine Straftat begangen. | ○ | ○ | ○ | ○ | ○ |
| • Im Allgemeinen nimmt die Polizei nur Leute fest, wenn sie sich sicher ist, dass diese die Straftat auch begangen haben. | ○ | ○ | ○ | ○ | ○ |
| • Mildernde Umstände sollten nicht berücksichtigt werden - wenn eine Person eine Straftat begeht, sollte sie auch bestraft werden. | ○ | ○ | ○ | ○ | ○ |
| • In Deutschland sind zu viele unschuldige Menschen inhaftiert. | ○ | ○ | ○ | ○ | ○ |
| • Wenn der Großteil der Beweise - jedoch nicht alle - dafür sprechen, dass der Angeklagte die Straftat begangen hat, sollte er freigesprochen werden. | ○ | ○ | ○ | ○ | ○ |
| • Ein Angeklagter ist oftmals ein Opfer seines eigenen schlechten Rufes. | ○ | ○ | ○ | ○ | ○ |
| • Die meisten Straftäter begehen Straftaten aufgrund mangelnder Intelligenz. | ○ | ○ | ○ | ○ | ○ |
| • Straftaten werden nur durch bestimmte Individuen bzw. Verbrechertypen begangen. | ○ | ○ | ○ | ○ | ○ |
| • Die Kriminalitätsrate ist in der Unterschicht, bei Minderheiten und jungen Männern höher, weil diese von Natur aus krimineller sind. | ○ | ○ | ○ | ○ | ○ |
| • Arme Menschen werden viel häufiger verhaftet und bestraft als Reiche und das nur, weil sie arm sind. | ○ | ○ | ○ | ○ | ○ |
| • Ein Verbrecher ist aufgrund seiner Umstände zum Verbrecher geworden. | ○ | ○ | ○ | ○ | ○ |

| | | | | | |
|---|---|---|---|---|---|
| • Ein Großteil der Bevölkerung begeht von Zeit zu Zeit ein Delikt, z.B. Diebstahl, rote Ampeln überfahren etc. | ○ | ○ | ○ | ○ | ○ |
| • Eine unglückliche und unangemessene Erziehung birgt eine höhere Wahrscheinlichkeit, später straffällig zu werden. | ○ | ○ | ○ | ○ | ○ |
| • Die beste Möglichkeit die Anzahl der Straftaten zu senken, liegt in der Erhöhung des Strafmaßes. | ○ | ○ | ○ | ○ | ○ |
| • Es ist wichtig die Straftäter so schnell wie möglich nach der Tat zu bestrafen, um die Wahrscheinlichkeit, dass dies nochmals geschieht, zu senken. | ○ | ○ | ○ | ○ | ○ |
| • Bestrafung wirkt indem sie den Charakter des Straftäters verändert. | ○ | ○ | ○ | ○ | ○ |
| • Wenn wir das Strafmaß erhöhen, kann dies zu einer noch aggressiveren Gesellschaft führen. | ○ | ○ | ○ | ○ | ○ |
| • Um Straftaten unter Kontrolle zu bringen, ist es weitaus effektiver positives Verhalten zu unterstützen, als negatives Verhalten zu bestrafen. | ○ | ○ | ○ | ○ | ○ |
| • Die Gesellschaft sollte bessere Betreuungsstätten für junge Straftäter zur Verfügung stellen, um kriminelles Verhalten später zu unterbinden. | ○ | ○ | ○ | ○ | ○ |

[POLICE APPLICANTS, HIGH SCHOOL STUDENTS AND POLICEMEN IN TRAINING:] **Die Leute haben verschiedene Ansichten zu den Strafen, die Tätern auferlegt werden sollten. Nehmen wir zum Beispiel den Fall eines 21 Jahre alten Mannes, der zum zweiten Mal eines Einbruchs für schuldig befunden wurde. Dieses Mal stahl er einen Fernseher. Welche der folgenden Strafen halten Sie in einem solchen Fall für am besten angebracht?**

| | |
|---|---|
| • Geldstrafe | ○ |
| • Gefängnis | ○ |
| • Gemeinnützige Arbeit | ○ |
| • Bewährungsstrafe | ○ |
| • Eine andere Strafe | ○ |
| • Weiß ich nicht spontan | ○ |

**Wie hoch sollte Ihrer Meinung nach diese Geldstrafe ausfallen?**

☐ EURO

**Wie lange sollte er Ihrer Meinung nach im Gefängnis bleiben?**

- 1 Monat oder weniger ◯
- 2 - 5 Monate ◯
- 6 Monate - 11 Monate ◯
- 1 Jahr ◯
- 2 Jahre ◯
- 3 Jahre ◯
- 4 Jahre ◯
- 5 Jahre ◯
- 6 - 10 Jahre ◯
- 11 - 15 Jahre ◯
- 16 - 20 Jahre ◯
- 21 - 25 Jahre ◯
- Über 25 Jahre ◯
- Lebenslang ◯
- Weiß ich nicht spontan ◯

**Welche gemeinnützige Arbeit sollte er Ihrer Meinung nach ausführen?**

- Arbeit in Vereinen ◯
- Arbeit in sozialen Einrichtungen (Caritas, Rotes Kreuz etc.) ◯
- Unterstützung hilfsbedürftiger Personen ◯
- Reinigungsdienstleistungen ◯
- Sonstiges ◯

**Wie hoch sollte Ihrer Meinung nach diese Bewährungsstrafe ausfallen?**

☐ Monate

**Welche andere Strafe halten Sie für angemessen?**

**Was glauben Sie spontan, wie viele Straftaten werden aktuell in Deutschland pro 100 Einwohner begangen? (gemeint sind die polizeilich bekannten Straftaten)**

Anzahl der Straftaten

.....

## Your Person

[ALL PARTICIPANTS:] Zum Abschluss folgen nunnoch ein paar Fragen zu Ihrer Person. Bitte beantworten Sie auch diese so gewissenhaft wie möglich. Denken Sie daran, dass keine Ihrer Angaben mit Ihnen persönlich in Verbindung gebracht werden kann.

**Geschlecht:**

- Männlich ○
- Weiblich ○

**Ihr Geburtsjahr:**

19

**Wie groß sind Sie?**

cm

**Welche Staatsbürgerschaft(en) besitzen Sie aktuell?**

1.
2.
3.

**Hatten Sie jemals eine andere als diese Staatsbürgerschaft(en)? Wenn ja, welche?**

1. ☐
2. ☐
3. ☐

**Wenn man mal alle Einkünfte zusammennimmt: Wie hoch ist Ihr derzeitiges monatliches Einkommen (z.B. Taschengeld, Nebenjob)?**
Falls nicht bekannt, bitte schätzen!

☐ EURO im Monat

[ONLY POLICEMEN IN TRAINING:] **In welcher Abteilung der Hessischen Hochschule für Polizei und Verwaltung studieren Sie?**

- Giessen ◯
- Kassel ◯
- Mühlheim ◯
- Wiesbaden ◯

[ONLY POLICEMEN IN TRAINING:] **In welchem Semester haben Sie Ihr Studium begonnen?**

- Sommersemester ◯
- Wintersemester ◯

[ONLY POLICEMEN IN TRAINING:] **In welchem Jahr haben Sie Ihr Studium begonnen?**

☐

[ONLY POLICEMEN IN TRAINING:] **In welcher Abteilung der Hessischen Hochschule für Polizei und Verwaltung studieren Sie?**

- Studienabschnitt I ○
- Grundlagentraining / Praktikum ○
- Grundstudium II ○
- Praktikum II ○
- Hauptstudium I ○
- Hauptstudium II ○

**Gibt es jemanden in Ihrer Familie, Ihrem Freundeskreis oder engerem Bekanntenkreis, der bei der Polizei beschäftigt ist oder war?**

- Nein ○
- Ja, Familie ○
- Ja, Freundes- oder engerer Bekanntenkreis ○

[ONLY POLICE APPLICANTS] **Wie wichtig war dieser Kontakt für Ihre Entscheidung, sich bei der Polizei zu bewerben?**

| Überhaupt nicht wichtig | | | | Sehr wichtig |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| ○ | ○ | ○ | ○ | ○ |

**Welchen höchsten Schulabschluss haben Sie oder schließen Sie in Kürze ab?**

- Keinen Schulabschluss ○
- Volks- / Hauptschulabschluss ○
- Mittlere Reife / Realschulabschluss ○
- Fachhochschulreife ○
- Abitur / Allgemeine Hochschulreife ○
- Anderen Schulabschluss ○

**Haben Sie noch eine weitere Ausbildung?**

- Abgeschlossenes Studium ◯
- Studium ohne Abschluss ◯
- Abgeschlossene Berufsausbildung ◯
- Berufsausbildung ohne Abschluss ◯
- Keine ◯

[ONLY UNIVERSITY STUDENTS:] **Ihr Studienfach:**

[ ]

[POLICE APPLICANTS, HIGH SCHOOL STUDENTS AND POLICEMEN IN TRAINING:] **Wo haben Sie den größten Teil Ihrer Kindheit bis zum 15. Lebensjahr verbracht? War das . . .**

- eine Großstadt ( $>$ 100.000 Einwohner) ◯
- eine mittlere Stadt ( 20.001 - 100.000 Einwohner) ◯
- eine Kleinstadt ( 5.000 - 20.000 Einwohner) ◯
- auf dem Lande ( $<$ 5.000 Einwohner) ◯

**Welchen Schulabschluss hat Ihre Mutter / Ihr Vater?**

| | Vater | Mutter |
|---|---|---|
| • Keinen Schulabschluss | ○ | ○ |
| • Volks- / Hauptschulabschluss | ○ | ○ |
| • Mittlere Reife / Realschulabschluss | ○ | ○ |
| • Fachhochschulreife | ○ | ○ |
| • Abitur / Allgemeine Hochschulreife | ○ | ○ |
| • Anderen Schulabschluss | ○ | ○ |
| • Weiß nicht | ○ | ○ |

**Hat Ihre Mutter / Ihr Vater noch eine weitere Ausbildung?**

| | Vater | Mutter |
|---|---|---|
| • Ja, berufliche Ausbildung | ○ | ○ |
| • Ja, Hochschulstudium | ○ | ○ |
| • Nein, keine abgeschlossene Ausbildung | ○ | ○ |
| • Weiß nicht | ○ | ○ |

[ONLY POLICE APPLICANTS:] **Haben Sie bereits zuvor im Rahmen einer anderen Berufsbewerbung oder als Schüler(in) an dieser Untersuchung teilgenommen?**

| | |
|---|---|
| • Nein | ○ |
| • Ja | ○ |

[ONLY HIGH SCHOOL STUDENTS:] **Haben Sie sich jemals für den Polizeidienst beworben?**

| | |
|---|---|
| • Nein | ○ |
| • Ja | ○ |

**Welchen Schulabschluss schließen Sie 2011 ab?**

- Keinen Schulabschluss ○
- Volks- / Hauptschulabschluss ○
- Mittlere Reife / Realschulabschluss ○
- Fachhochschulreife ○
- Abitur / Allgemeine Hochschulreife ○
- Keinen ○
- Anderen Schulabschluss ○

[ALL PARTICIPANTS:] **Wie oft haben Sie in den letzten 12 Monaten an Umfragen (im Internet, textbasiert oder telefonisch) teilgenommen?**

- Gar nicht ◯
- 1 - 2 mal ◯
- 3 - 10 mal ◯
- 11 - 25 mal ◯
- Öfter ◯

[ALL PARTICIPANTS:] **Wie oft haben Sie in den letzten 12 Monaten an Gewinnspielen (kein Lotto, Oddset oder ähnliches) teilgenommen?**

- Gar nicht ◯
- 1 - 2 mal ◯
- 3 - 10 mal ◯
- 11 - 25 mal ◯
- Öfter ◯

. . . . . .

[POLICE APPLICANTS AND HIGH SCHOOL STUDENTS:] **Vielen Dank, dass Sie an dieser Untersuchung teilgenommen haben!**
Wenn die Untersuchung abgeschlossen ist, werden wir **15 Teilnehmer(innen)** auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen verdient haben. Zusätzlich verlosen wir unter allen Teilnehmer(inne)n **3x iPod Nano**. Damit wir Sie kontaktieren können, bitten wir Sie, uns Ihre Kontaktinformationen mitzuteilen.
Wenn Sie keine E-Mail-Adresse eingeben möchten, können wir Sie leider nicht kontaktieren. In diesem Fall können Sie leider nicht am Gewinnspiel teilnehmen.
Ihre E-Mail-Adresse wird von uns streng vertraulich behandelt und nach Abschluss der Untersuchung umgehend gelöscht. Sie dient ausschließlich dazu, die ausgelosten Gewinner zu kontaktieren. Sie erhalten von uns keine weiteren Benachrichtigungen.

[POLICEMEN IN TRAINING:] **Vielen Dank, dass Sie an dieser Untersuchung teilgenommen haben!**
Wenn die Untersuchung abgeschlossen ist (Juli 2011), werden wir 9 Teilnehmer(innen) auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen verdient haben. Zusätzlich verlosen wir unter allen Teilnehmer(inne)n 2 x iPod Nano. Damit wir Sie kontaktieren können, bitten wir Sie, uns Ihre Kontaktinformationen mitzuteilen.
Wenn Sie keine E-Mail Adresse eingeben möchten, können wir Sie leider nicht kontaktieren. In diesem Fall können Sie leider nicht am Gewinnspiel teilnehmen.
Ihre E-Mail Adresse wird von uns streng vertraulich behandelt und nach Abschluss der Untersuchung umgehend gelöscht. Sie dient ausschließlich dazu, die ausgelosten Gewinner zu kontaktieren. Sie erhalten von uns keine weiteren Benachrichtigungen.

[ONLY UNIVERSITY STUDENTS:] **Vielen Dank, dass Sie an dieser Untersuchung teilgenommen haben!** Wenn die Untersuchung abgeschlossen ist, werden wir *8* Teilnehmer(innen) auslosen und diesen exakt die Geldsumme auszahlen, die sie durch ihre Entscheidungen verdient haben. **Falls Sie ausgelost werden, informieren wir Sie per E-Mail.**

[ALL PARTICIPANTS:]**Vielen Dank! Zum Beenden dieser Umfrage schließen Sie bitte einfach dieses Fenster.**

# Curriculum Vitae

**Dipl.-Kfm. Bernard Richter**

*Department of Economics, Goethe University Frankfurt, Germany*

*Grüneburgplatz 1, 60323 Frankfurt am Main*

**Contact**

Email: brichter@wiwi.uni-frankfurt.de

Email: brichter@flex.uni-frankfurt.de

**Personal information**

Date of birth: December 15, 1983

Place of birth: Temeschburg

Citizenship: German

## Education

| | |
|---|---|
| *11/2009 - present* | **Goethe University Frankfurt, Germany**<br>Doctoral Studies in Economics |
| *10/2004 - 10/2009* | **Goethe University Frankfurt, Germany**<br>Diploma Studies<br>Major: Business Administration<br>Minor: Work and Organizational Psychology |
| *1994 - 2003* | **Heinrich von Gagern Gymnasium Frankfurt, Germany**<br>Abitur |

## Professional Scientific Experience

| | |
|---|---|
| *11/2009 - present* | **Teaching and research associate**<br>Prof. Dr. Michael Kosfeld, Goethe University Frankfurt, Germany |
| *11/2009 - 10/2012* | **Doctoral fellowship**<br>Prof. Dr. Roman Inderst, Goethe University Frankfurt, Germany |

## Other Profession

| | |
|---|---|
| *2013* | **RCON UG (haftungsbeschränkt), Mörfelden-Walldorf** |
| *08/2006 - 02/2007* | **Privatbank B.Metzler seel. Sohn & Co, Frankfurt am Main** |
| *2006* | **WAK Chemie Mediacal GmbH** |
| *2002* | **Barclays PLC, Frankfurt am Main** |

Inaugural Dissertation zur Erlangung des Doktorgrades
des Fachbereiches Wirtschaftswissenschaften
der Goethe-Universität Frankfurt

Kontakt:
Bernard Richter (b.richter@econ.uni-frankfurt.de)
Goethe-University Frankfurt am Main
Faculty of Economics and Business Administration
Chair for  Organisation and Management
Campus Westend, RuW-Gebäude
Grüneburgplatz 1
60323 Frankfurt am Main